



The Neolithic of Europe

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THE NEOLITHIC OF EUROPE

PAPERS IN HONOUR OF ALASDAIR WHITTLE

Edited by

PENNY BICKLE, VICKI CUMMINGS,
DANIELA HOFMANN AND JOSHUA POLLARD

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Front cover: Alleskoven dolmen, Denmark (Vicki Cummings).

Back cover: La Table des Marchands, France (Vicki Cummings); a reconstructed LBK longhouse in the Paris basin (Penny Bickle); Carrowmore, Ireland (Vicki Cummings); an excavation in progress at the Herpaly tell, Hungary (Pál Raczky).

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Tabula gratulatoria

In publishing this volume, the editors, contributors and publishers congratulate Alasdair on his contribution to many aspects of prehistoric archaeology: theoretical, practical and interpretational. His work and his teaching have been inspirational to the discipline as a whole and, in particular, to several generations of students, many of whom have gone on to make their own contribution.

The following wish to join us in congratulating Alasdair, and in celebrating his contribution to archaeology (so far).

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Introduction: Alasdair Whittle and the Neolithic of Europe

Joshua Pollard, Penny Bickle, Vicki Cummings and Daniela Hofmann

This volume of essays has been prepared in recognition of the academic contribution and friendship of Alasdair Whittle, Distinguished Research Professor in Archaeology at Cardiff University. Alasdair has rightly gained an international reputation as a leading scholar on the British and European Neolithic, and more generally as promoting the study of prehistory. He is a Fellow of the British Academy, a founding Fellow of the Learned Society of Wales, a former Vice-President of the Prehistoric Society and co-editor of the *Proceedings of the Prehistoric Society* from 1988 to 1994, and recipient of that Society's Europa Prize (2014). As a leading prehistorian his contribution has been prolific, far-reaching and scene-changing: seen in the creation of important

works of synthesis (e.g. *Europe in the Neolithic* (1996)) and interpretation (e.g. *Problems in Neolithic archaeology* (1988), *The archaeology of people* (2003)); the analysis of existing data sets to better define chronologies and diversity in Neolithic lifeways (e.g. *Gathering time* (2011), *The first farmers of central Europe* (2013)); and the generation of new data and interpretation through fieldwork (e.g. *Sacred mound, holy rings* (1997), *The harmony of symbols* (1999), *The early Neolithic of the Great Hungarian Plain* (2007)). This has taken him on a wide-ranging journey across Neolithic Britain and Europe, from the far north in Shetland, to the Wessex chalk around Avebury, to the East Anglian fens, and more recently to south-eastern and central Europe (Hungary and Bavaria).

An abiding fascination with the Neolithic has run through Alasdair's career, beginning with an Oxford DPhil on the continental background to the southern English early Neolithic (published as a British Archaeological Report in 1977). Throughout, certain themes have remained central in his work: Neolithic beginnings and the role or otherwise of foragers in that process; the centrality of beliefs, values and ideals in shaping Neolithic life; process, scales and timings; and prehistoric lifestyles and routine – trying to understand ‘what it was like’ to be there. The latter concern with the detail of life – its rhythm, texture and relations – has given much of his work an ethnographic flavour; one much enhanced by his sensitive working in of anthropology, though more to frame possibilities than offer any kind of direct analogy. Perhaps the best example is *The archaeology of people* (2003), which offers a telling illustration of Alasdair's prodigious consumption of social anthropology (and magisterial understanding of the record of the European Neolithic). It can be argued that ethnographic instance has been a stronger driver in the development of his ideas than ‘pure’, philosophy-derived theory. That has distinguished him to a degree from other scholars working in the period who led, and were led by, the rapidly

shifting theoretical arms race of the 1980s to early 2000s, at least within the Anglo-Saxon tradition. Alasdair engages with archaeological theory, but has never been a slave to its fashions, adopting a strategy instead of taking ‘what is good’, and staying close to the detail of the data. In that lies the strength of his approach.

The path of Bayes

Alasdair has embraced the recent ‘scientific turn’ in prehistory whilst retaining the humanism that needs to guide it. There has been an interest in the potential of new forms of osteological analysis, work on stable isotopes, aDNA and lipids and so forth, to provide direct answers to questions around past human lifestyles and practices (e.g. Whittle and Bickle 2014). A concern with time, temporality and the establishment of firmer chronologies as a means to achieve history runs through his work. More recently, this has been articulated through his direction (along with Alex Bayliss) of three major projects designed to produce refined radiocarbon chronologies for selected monuments, events and places in the British and European Neolithic. Taking a problem-oriented approach, in each case existing sets of reliable dates have been combined with new results on carefully selected samples, and subject to Bayesian modelling of sequences. Work on southern English long barrows (Bayliss and Whittle 2007) was followed closely by the ambitious dating programme on British causewayed enclosures. The result was a truly landmark publication that has reshaped not just understanding of the timings and duration of early monument building, but the chronology of the southern British early Neolithic as a whole, with implications for understanding the direction and mechanics of transmission of new lifeways at its start (Whittle *et al.* 2011). It is perhaps fitting that we can now talk of a ‘Gathering time’ generation of people working on the Neolithic, and of a confidence that prehistory *can*

be history. The third (and current) project – The Times of Their Lives (TOTL) – is the most ambitious, in which the team seek ‘to provide much more precise timings of key features and trends in the European Neolithic sequence’, from the Balkans to the Scottish Northern Isles (<http://totl.eu/>).

Neolithic values

In *Europe in the Neolithic* Alasdair talked of ‘Neolithic ideals, divinely sanctioned’ which ‘included cooperation, participation, integration, generosity, hospitality and prowess’ (Whittle 1996, 371). All scholarship is shaped by the values, experience and *habitus* of its progenitor, and so we might expect to see reflected in this image of the Neolithic world something of Alasdair as a scholar. Now, we are not aware that his career is divinely sanctioned (we suspect it owes more to the mortal man himself, and support from his family and academic colleagues and institutions). We are, though, on firmer ground when it comes to recognising cooperation, participation, integration, generosity, hospitality and prowess as constituents of Alasdair’s character. Cooperation and participation are self-evident in his work, especially that which has involved team-based research (notably his fieldwork, the enclosures dating programme and TOTL). Integration is there in works of synthesis. It is also a feature of his desire to tie up loose ends and see to completion work that is unfinished. This is the context for his writing up of important backlog excavations, notably those undertaken by his former colleague at Cardiff, Richard Atkinson (the fourth and third millennium BC monuments of Parc le Breos Cwm, Wayland’s Smithy, Dorchester-on-Thames and Silbury Hill: Whittle 1991; 1997; Whittle and Wysocki 1998; Whittle *et al.* 1992), or the important excavations of the Cotswold-Severn tomb at Ascott-under-Wychwood with its director, Don Benson (Whittle and Benson 2006). There is early influence here from his DPhil

supervisor, Humphrey Case, who, with Alasdair as Research Assistant, brought to publication a number of key Thames gravel rescue excavations (Case and Whittle 1982). Prowess goes without saying.

Alasdair has always shown generosity of time and opinion to colleagues and students alike, especially in offering pre-publication advice on manuscripts and grant applications. His hospitality is evident on fieldwork (making student excavators comfortable was a priority), and support has been plentiful for his PhD students as they find their way through the first stages of research and then academic careers. It is telling that so many of his former students have gone on to secure academic positions, the editors of this volume among them. He is good company and a good travel companion, with a ready and infectious (if sometimes schoolboyish) sense of wit. So it just remains for us, as editors and contributors to this volume, to thank Alasdair for helping make the Neolithic (and prehistory in general) a world of absorbing and intellectually stimulating inquiry, and for his support and collegiality.

The papers in this volume

Putting together a collection of papers in honour of Alasdair's career was always going to be a tricky matter. This was because so many colleagues wrote to us expressing a desire to be part of this volume; indeed, we had so many offers that we decided to take a rather different strategy than ask for individual papers from everyone who wanted to be involved. Instead, so that Alasdair would actually be able to lift his own *Festschrift*, we decided to pair people up to reduce the overall number of papers. This was not done using the time-honoured 'drawn-out-of-a-hat' method, but instead we spent time thinking which combinations of people might produce the most interesting results. In the first instance we wish to state here how grateful we are to the contributors who

suffered our attempts at academic matchmaking, but we hope that you enjoyed being paired up with someone with whom you might not otherwise have worked. We also hope that you, Alasdair, enjoy this form of ‘fusion archaeology’.

The papers are offered, very broadly, in relation to geography, starting, as any good Neolithic archaeologist does, over where it all began in south-east Europe. Many papers do not quite conform to this, however, as they cover several geographic areas, but nevertheless, we end up towards the end of the volume with the papers focusing on Britain and Ireland.

In the first of our pairings, Penny Bickle and Evita Kalogiropoulou compare settlement practices in two contrasting areas of Neolithic Europe: northern Greece and the Paris basin. They investigate whether there was a shared Neolithic house ‘ontology’ that can be identified in the forms and orientations of daily life at settlements in the two regions. Although they identify a long-term trend to increased diversity in both areas, there were significant differences in how communities built and responded to histories of place. The Neolithic house was thus a historical context in which people were living.

James Whitley’s paper considers the end of tells in the central and northern Aegean, thinking about their use beyond the Neolithic into the Bronze and Iron Ages. He discovers that there was not a single point in time when tells stopped being occupied; instead, they seem to have gradually fallen out of use. Moreover, tells do not appear to have been considered important once they were abandoned, seeing no further activity of any kind. This leaves Whitley to think that perhaps it was better to burn out, as some tells did, than to fade away.

Steve Mills, Mark Macklin and Pavel Mirea explore the dynamic character of human–river interactions in the Teleorman valley, which is part of the Danube river system in modern-day Romania. Hydrogeological work is crucial for understanding the impact of Rapid Climate Change (RCC) events both on past

communities and on the visibility and preservation of the archaeological record. As the authors point out, we must investigate how sensitive or resilient past communities were to (locally and regionally diverse) environmental changes in order to avoid monocausal and deterministic explanations. For the Teleorman valley, they suggest that a more stable riverine environment may have contributed to the attraction of a Neolithic lifestyle, while a period of greater instability could be associated with the end of tell settlements.

In the first of two papers centred on burial evidence from the Carpathian basin, Eszter Bánffy, János Jakucs, Kitti Köhler, Tibor Marton, Krisztián Oross and Anett Osztás discuss unusual burials from three Neolithic sites in the Sárköz region of southern Hungary. These comprise individuals associated with hearths and ovens at Alsónyék–Bátaszék, a child burial covered with sherds at Szederkény and an unusual secondary burial with anthropomorphic figurines at Fajsz–Garadomb. Burial in ovens or pots (Cummings and Richards would perhaps refer to this as a kind of ‘wrapping’) is ultimately a rite of more southern inspiration, and indeed several of these sites exhibit interesting blends of ceramic material and practices which would traditionally be classed as belonging to several different ‘cultures’. Large-scale inter-regional communication networks, local situations and the intimate, personal scale of each individual burial event hence combine to create a rich and complex picture that must be appreciated at several analytical scales – something Alasdair has always advocated in his work.

Pál Raczky and Alexandra Anders take these issues further by adding multiple temporal layers into the mix. Their analysis focuses on the site of Polgár–Csőszhalom, where a tell settlement, an associated flat site and enclosure ditches have been uncovered. As at Alsónyék, then, Neolithic people were finding new ways of living together in much larger communities, and differential burial was one avenue for negotiating this. Raczky and Anders present

four unusual interments and conclude that burial is a mutable arena for expressing social relations, one that responds to historical transformations. Burials placed on the tell may have been referencing much deeper, ancestral time scales removed from the faster beat of quotidian routines on the flat site.

Rick Schulting and Dušan Borić have set themselves the challenging task of comparing processes of Neolithisation in south-east Europe and in Britain and Ireland using isotopic evidence. While in the Danube Gorges people appear to have seamlessly combined dietary strategies we have unhelpfully tended to differentiate into 'Mesolithic' and 'Neolithic', over the longer term aquatic resources increasingly give way to terrestrial foods. In Britain, there is a rapid change to terrestrially-dominated diets in the Neolithic, even in coastal locations, and no evidence for a transitional phase. Yet while the outcome of the transition, i.e. the establishment of a mixed farming economy reliant on terrestrial foods, is comparable between both areas, we must still do more to pinpoint the role of human migrations in the Neolithisation process, as well as to identify and explain the divergent historical trajectories that followed it.

László Bartosiewicz, Alice Choyke and Ffion Reynolds continue on an animal theme, but focus on the symbolic role of one particular species, red deer. Their starting point is a worked frontlet from the Iron Age site of Sajópetri, Hungary. Having first contextualised the find in its regional and chronological setting, they provide a wide range of comparanda illustrating the importance of deer symbolism in societies around the world, from the European Mesolithic and Palaeolithic to Siberian hunter-gatherers and Medieval Wales. Whether or not the frontlet can be used to support an association with the Celtic god Cernunnos, it is clear that the Sajópetri find comes from an area in which more western, 'Celtic' and more eastern, 'Scythian' cultural elements were combined, and this provides a fertile background for further study concerning the economic and symbolic role of deer for Iron

Age society.

Amy Bogaard, Stefanie Jacomet and Jörg Schibler then take us back to the Neolithic and into central Europe, comparing the economic regimes of the Alpine foreland to those in the loess zone. The contrasting preservation conditions of the two areas offer very different opportunities for study. While year on year changes can be tracked on some wetland sites, loess sites provide broader overviews of general trends in plant and animal use. Nevertheless, using archaeobotanical, palynological and archaeozoological sources, the authors succeed in teasing out similar developments over the course of the Neolithic sequence as a whole. In both areas, crops were intensively managed in garden-style plots, and the importance of herding increases over time. Any cultural differences between the Alpine and loess regions are thus not determined by a divergent economic basis, but, as the authors point out, reflect different reactions to the social dynamics inherent in a Neolithic way of life.

In a similar vein, Daniela Hofmann and Eva Lenneis discuss a particularly intractable problem of LBK architecture, namely the significance of tripartite houses. These structures, which show a more subdivided interior and are often longer than their bipartite counterparts, are not equally frequent in all regions and phases of the LBK. A detailed comparison of five settlements from across the LBK distribution reveals that the frequency, biography and architectural characteristics of tripartite houses are very much implicated in local settlement trajectories, resonating with varying social situations on the ground. Once again, the shared material vocabulary of the LBK diverges in detail as it becomes involved in specific historical settings over time. It is this potential for creative difference which ensured the central role of the house in LBK society.

Switching from domestic to monumental architecture, Philippe Lefranc, Anthony Denaire and Rose-Marie Arbogast consider five enclosures from different middle Neolithic culture groups in

Alsace. These sites are so-called ‘pseudo-enclosures’, i.e. ditches that were not excavated in one go, but dug as several individual pits following a predefined trajectory, and only merging into one continuous archaeological feature over many generations. It seems, then, that the practice of excavation (and in some cases also the deposition of various materials) was more important to Neolithic communities than the finished monument in itself. The long-term existence and wide geographic distribution of these sites is testament to the success of this form of monument, while some sites – such as Duntzenheim or Meistratzheim – allow us to glimpse the details of the ceremonial activities played out there.

In his ambitious paper, Christian Jeunesse covers the *longue durée* of prehistoric and later social development in Europe by outlining an interesting dialectic between periods in which elite graves form a relatively flat hierarchy, and those – generally short – phases in which truly exceptional prestige goods are deposited in what could be termed chiefly or princely graves. Similarly, material in hoards is deposited either in the shape of mass finds of relatively common items, or in the form of unique objects. This dialectic can be documented from the sixth millennium BC to the end of the first millennium AD and forms the basis of an enduring set of values that characterise ‘Barbarian Europe’. In this sense, technological and economic changes in the course of prehistory and early history never managed to transcend the underlying worldview; only the wide-spread introduction of Christianity finally transformed this constellation irrevocably.

Richard Bradley and Leonardo García Sanjuán consider two sets of monuments, those of the Morbihan, Brittany, and those at Menga near Málaga in Spain. They may have been built in response to natural disasters or were, in some cases, destroyed by catastrophic events. In Brittany this could have involved rising sea levels as well as earth tremors. At Menga, the enormous monument may have been built due to the collapse of important natural features by earthquakes.

Another paper which focusses on two geographic areas is that by Andrew Meirion Jones, Andrew Cochran and Marta Diaz-Guardamino, whose contribution covers the rock art and carved objects of Britain, Ireland and Atlantic Iberia. By exploring various examples they demonstrate that there is extensive evidence for reworking and re-use in Neolithic art. The acts of erasure, superimposition and reworking are essential in gaining a more nuanced understanding of the sites where art occurs: these were fluid and changeable symbols, the act of making and performance being key in their deployment.

Alistair Barclay and Oliver Harris return to the topic of domestic architecture, using the increasing evidence for Neolithic houses in Britain and Ireland to trace how different kinds of communities could be brought into being. At White Horse Stone in Kent, community emerges through the construction, maintenance and alteration of one large building, while at Horton in Berkshire there is a small settlement of separate houses. Finally, at Warren Field in Aberdeenshire, a complex division of space was created, structuring daily life to a greater extent. In other areas, in spite of decades of developer-led archaeology, there are still no early Neolithic houses, and the authors suggest that this, too, can now be considered a deliberate difference suggestive of a specific style of dwelling. Different ways of doing things and different reactions to innovation were always possible, even within what we now define as an 'early Neolithic' horizon.

Vicki Cummings and Colin Richards consider the passage grave tradition of Britain and Ireland in relation to the concept of 'wrapping'. They note that many of the excavated examples of passage graves appear to have a whole series of different layers which encircle the central chamber area. Many of these layers have no obvious function; indeed, some of them appear to hinder access into the chamber. The authors ponder whether, in fact, it was the act of wrapping which was the most important element of these monuments, not that which was wrapped (the chamber).

This, they argue, affects how these monuments are interpreted.

The paper by Alex Bayliss, Caroline Cartwright, Gordon Cook, Seren Griffiths, Richard Madgwick, Peter Marshall and Paula Reimer returns to a site much cherished by Alasdair: the West Kennet palisade enclosures, where he conducted fieldwork in the late 1980s and early 1990s. Thanks to the meticulous recording kept at the time and the available archives in various institutions, it was possible to obtain new ^{14}C -dates and to re-assess the chronology of the site within a Bayesian statistical framework. The results are surprising to say the least, making the enclosures several centuries earlier than previously supposed and suggesting the existence of a large Grooved Ware settlement. Apart from serving as a salutary warning against dating monuments by their morphological similarity to others, this provides the opportunity for a fundamental re-evaluation of the place of the West Kennet enclosures in the British Neolithic sequence.

Josh Pollard and colleagues tackle the use of Stonehenge in the Chalcolithic and Bronze Age. This iconic monument is most often discussed in relation to its late Neolithic sequence and the broader role it played in the massive monumental complex incorporating the site itself and associated architecture such as Durrington Walls. The post-Neolithic saw continued activity, albeit on a smaller scale. A variety of different constructional acts took place, both within the confines of the monument as well as in the landscape beyond. It appears that Stonehenge continued to play an important role in the lives of people in this area, in terms of a place marking important times of the year but also in the structuring of broader networks and lineages. Increasingly, however, other forms of monument and actions took precedence.

Finally, Alison Sheridan re-evaluates the evidence for relations between Ireland and Scotland across a large chunk of the Neolithic. She clearly favours migration from Continental Europe as the ultimate source of Neolithic things and practices in both areas, as supported by the growing corpus of early radiocarbon

dates and lately by first aDNA studies, and outlines two strands of migration. Interaction between Ireland and Scotland remains of crucial importance in subsequent centuries, as for instance seen in stylistic similarities in pottery and megalithic architecture, as well as the distribution of lithic material. In both regions, hierarchical societies ultimately develop, with elites driving the construction of monument complexes in areas such as the Boyne Valley and Orkney.

Taken together, these papers reflect the breadth of Alasdair's interest as much as the respect and friendship he commands among colleagues across Europe. We hope that they form a suitable gift on this occasion and will keep him entertained in times to come, when he will hopefully be able to devote even more time to archaeological writings and projects.

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an idea of scale is always important...

‘Very like the Neolithic’: the everyday and settlement in the European Neolithic

Penny Bickle and Evita Kalogiropoulou

Introduction

The title of the paper is a slight alteration from a provocative paper, entitled ‘Very like a whale’ (Whittle 2000), discussing menhir motifs from Brittany. The phrase is a direct quote from Shakespeare’s *Hamlet*, and refers to a scene where Hamlet is describing clouds, ever shifting in shape and form (a camel, a weasel ‘or like a whale’), to a weary Polonius (who responds ‘very like a whale’). Whittle’s suggestion that the whale was one of the recurring themes of decorated menhirs was only the starting point for debating how narrative and myth were bound up with the Mesolithic–Neolithic transition in this region. Rather than envisaging these figures as either one definitive thing or another,

Whittle (2000) argues that these were contested, partial and ambiguous images. We take this as a starting point to initiate a discussion on the essential traits which define the Neolithic period in two geographically, chronologically and culturally different regions in Europe. These two regions are northern Greece (defined here as Macedonia and western Thrace) and the Paris basin (Fig. 2.1). Our objective is not restricted to creating comparisons between the two regions but aims at featuring the local variability and social diversity that emerges in the European Neolithic (Kotsakis 2014; Thomas 2015; Whittle 2015). In the scene from *Hamlet*, Polonius agrees with each new description proposed by Hamlet for the cloud, in much the same way that each new model proposed for the Neolithic is applied to each region in Europe. In asking ‘very like the Neolithic?’, we want to investigate whether there is a ‘Neolithic ontology’ worth holding on to as the different regions and scales of Neolithic society are investigated.

The approach we advocate in our study is the investigation of the ‘everyday’ by a comparative analysis that examines landscape habitation choices and settlement practices between the two regions. The study of domestic architecture, open-air spaces and demarcation forms allows us to get a glimpse of everyday practices, performances and daily routines, to unfold evidence of socialities within different communities. The ability and usefulness of studying everyday life through archaeology has been questioned, usually in the context of debating whether historical phenomena are best explained over the long- or short-term, deep time processes or more immediate human action (Bailey 2006; Lucas 2005; Robb and Pauketat 2013). The ‘everyday’ is usually placed squarely in the camp of the latter, a means of recovering small and intimate decisions building to the long-term, but as Robb (2013, 658) notes, these actions take place in a material world ‘shaped by deep time’. By pursuing the everyday in the past, we are therefore not calling for small-scale, short-term archaeologies, but rather an attention to the routines and rhythms

that textured social life. Two models of social life have been prominent, often treated together as practice-based approaches and both rooted in anthropology; the 'dwelling perspective' proposed by Tim Ingold (2000) and the concept of the habitus from Pierre Bourdieu (1970; 1990). Practice-based approaches conceptualise social life as performed and performative, continually made through action in and of the world. Worldviews are revealed, learnt and remade through participation in the world (Bourdieu 1977; 1990; de Certeau 1984; Ingold 2000; Lefebvre 1991). Along with phenomenological approaches, these approaches have inspired far more small-scale, short-term archaeologies than long-term ones. More recently, however, the concept of ontology has risen to the fore in archaeological debates, under the umbrella of the 'material turn' across the social sciences and humanities more broadly (e.g. Alberti *et al.* 2011; Carrithers *et al.* 2010; Olsen 2010). This 'turn' has been presented as a radical rethinking of what social life is, not made solely between people, but in assemblages of things, people, animals and materials. It could be argued to have coincided with a return to thinking over the longer term (Robb and Harris 2013), but has seen an increased focus on materials. Here we wish to broaden the focus to settlement.



Figure 2.1. Map of Europe indicating the regions discussed in this paper.

Ontology, defined as a philosophy concerned with the nature of being, is most frequently used to describe the most fundamental theories held about the nature of existence (Olsen 2010). In archaeology, the shift to ontological thinking has therefore been described as a move from capturing how the world is perceived to the ‘kinds of beings, processes and qualities’ that can exist (Harris and Robb 2012, 668), from past ‘worldviews’ to past ‘worlds’ (Henare *et al.* 2007, 10–12). We do not think that a practice-based approach and an ontological-based approach are necessarily in conflict. Social practice is, of course, ontological, informed by conceptions of being. Thus, for us, the significance of the ontological critique is not that suddenly archaeologists are taking the reality of other worlds seriously, but rather the ontological approaches mean conceptualising what matters in the forms of action and materials that are possible in particular worlds. Thus

we argue that considering social practice through its everyday routines and contexts is a route into revealing past ontologies. Key is that, at times, archaeologists are going to attend more to the ontological differences and how ontology changed over time (e.g. what a human body is and how it is through time, Robb and Harris 2013). At other times, we may wish to reveal where different practices originate in shared concepts held about the world. This is where we situate our paper. Through comparing the similarities and differences on the level of routine practices between two regions of the Neolithic – northern Greece and the Paris basin – is a shared ontological apparatus revealed? Or are there distinctly separate ontologies?

Northern Greece

Summary of chronological sequence

The strategic geographical location at the crossroads of Anatolia, the Near East and the Balkans has triggered ongoing academic debates on the origins of the Greek Neolithic, especially since the 1970s (Efstratiou 2005; 2007; Kotsakis 2001; 2003; Perlès 2001; 2005; Reingruber 2011; Runnels 2003; Theocharis 1967; 1971). Inconspicuous archaeological evidence and discontinuity between Mesolithic and Neolithic populations, however, restricts our understanding of the sequence of events that led to the Neolithisation of the Greek peninsula and has resulted in a series of conflicting theories (Efstratiou 2007; Kotsakis 2001; Perlès 2001; Valamoti and Kotsakis 2008; van Andels and Runnels 1995). Over the last three decades, a significant increase in archaeological work and systematic research in northern Greece has filled the gaps in our knowledge of the early Neolithic habitation in the region and revealed diversity in settlement patterns, complexity of social practices and habitation (Andreou *et al.* 1996; Demoule and Perlès 1993; Halstead 1999; Kalogiropoulou 2014; Kotsakis 1999; Kotsos and Urem Kotsou

2006; Souvatzi 2008). Regardless of the origins of people and the specifics of the inhabitation processes, current data demonstrate that by the middle of the seventh millennium cal BC, Macedonia and western Thrace were settled by farmers (Ammerman *et al.* 2008; Chrysostomou 1997; Karamitrou-Mentessidi 2009, 117–25; Kotsakis 2014, 50; Lespez *et al.* 2013; Perlès 2001, 100–6).

In west Macedonia, Nea Nikomedeia has long been considered one of the earliest farming settlements in Europe and the start of permanent habitation in the early Neolithic (EN: c. 6500–5800 cal BC) of northern Greece at the end of the seventh millennium cal BC (Rodden 1965, 83). In recent years, surveys and excavation projects in Macedonia and western Thrace revealed a substantial number of EN sites which seem to supersede the radiocarbon dates that Nea Nikomedeia produced in the 1960s. The site of Mavropigi-Filotsairi in west Macedonia demonstrates an uninterrupted sequence of occupation from the middle to the end of the seventh millennium cal BC (Karamitrou-Medessidi *et al.* 2013). Almost contemporary to Mavropigi-Filotsairi, the early stages of the EN are also recorded in other areas of the region, such as at the sites of Polyplatanos Imathias, Drosia in Edessa, Yiannitsa B and Axos A in the Yiannitsa plain (Chrysostomou 1993; 1997). Accordingly, after several decades of systematic archaeological research, EN sites are filling in the picture of permanent habitation in central Macedonia (Kotsos and Urem-Kotsou 2006, 200). Paliambela in Kolindros, Revenia in Pieria, Liti I and II in Langadas and Mikri Volvi are distinctive EN settlements with more or less contemporary habitation (Kotsakis 2014, 50; Kotsos and Urem-Kotsou 2006). Moving eastwards, new radiocarbon dates from the sites of Dikili Tash on the Drama plain and Makri in Alexandroupoli brings the beginning of early habitation in Macedonia and western Thrace from the middle of the seventh millennium cal BC into line with the EN in adjacent territories (Ammermann *et al.* 2008; Efstratiou *et al.* 1998; Lespez *et al.* 2013).

These new data add more evidence for the processes by which a new way of life was established in both local and regional conditions. Based on material culture characteristics, Perlès (2001, 60) suggested that the colonisation of Macedonia may have originated from the Balkans, while van Andels and Runnels (1995) proposed that Neolithic groups followed riverine pathways from central to northern Greece. In comparison, current theories for the Neolithisation of northern Greece suggest a multi-directionality of migratory movements and that each group brought its own 'package' (Kotsakis 2001; Valamoti and Kotsakis 2008). An increase of settlements is recorded during the middle Neolithic period (MN: c. 5800–5400/5300 cal BC) in Macedonia and western Thrace, while habitation continuity is also noted to some extent with the occupation of a few EN settlements continuing in the following period. In addition to the continuation of some MN settlements, the successive late Neolithic period (LN: c. 5400/5300–4500 cal BC) demonstrates considerable population growth and is defined by the exploration of different landscapes, with communities building in previously uninhabited regions (Fig. 2.2). Some of these new villages are close to the previously occupied MN settlements. The progressive population growth in the LN period in northern Greece was followed by a settlement decline in the final Neolithic (FN: c. 4500–3300/3200 cal BC) that indicates population decrease and marks a clear change in the dominant economic, cultural and social traits.

Settlement practices in northern Greece

Recent archaeological research in northern Greece shows that settlement practices are synonymous with increasing diversity in the landscapes settled and in all expressions of material culture, including settlement forms and architecture (Andreou and Kotsakis 1987; Kalogiropoulou 2013; 2014; Kloukinas 2014; Kotsakis 2014; Nanoglou 2008; Pappa 2008). It is now well-established that tell

sites constitute only one of the various habitation forms recorded in the region, while flat-extended sites, lake-side sites, and caves signify other practices of spatial organisation and daily living. Tell sites are dominant in east Macedonia and west Thrace, whereas flat-extended settlements represent the main settlement practice in central Macedonia (Andreou and Kotsakis 1987; Andreou *et al.* 1996; Kotsos and Urem-Kotsou 2006; Pappa 2008, 378). In west Macedonia, on the other hand, different settlement forms like tells, flat-extended sites, lake-side sites and caves co-existed, demonstrating a greater diversity in the organisation of living space. The average size of settlements varies from 2–10ha, while exceptionally large flat-extended sites, like Makriyalos in Pieria and Kleitos in Kozani, can reach up to 50ha or more (Pappa 2008; Pappa and Bessios 1999; Ziota in press). In contrast, tell sites rarely occupy an area that regularly exceeds 2ha. Considering spatial differences between these two settlement forms, it is evident that unlike the restricted habitation space with dense building configuration and limited open-air spaces in tell sites, flat-extended sites demonstrate spacious spatial developments that created wide living spaces and resulted in unfixed building arrangements with open-air activity spaces among them.

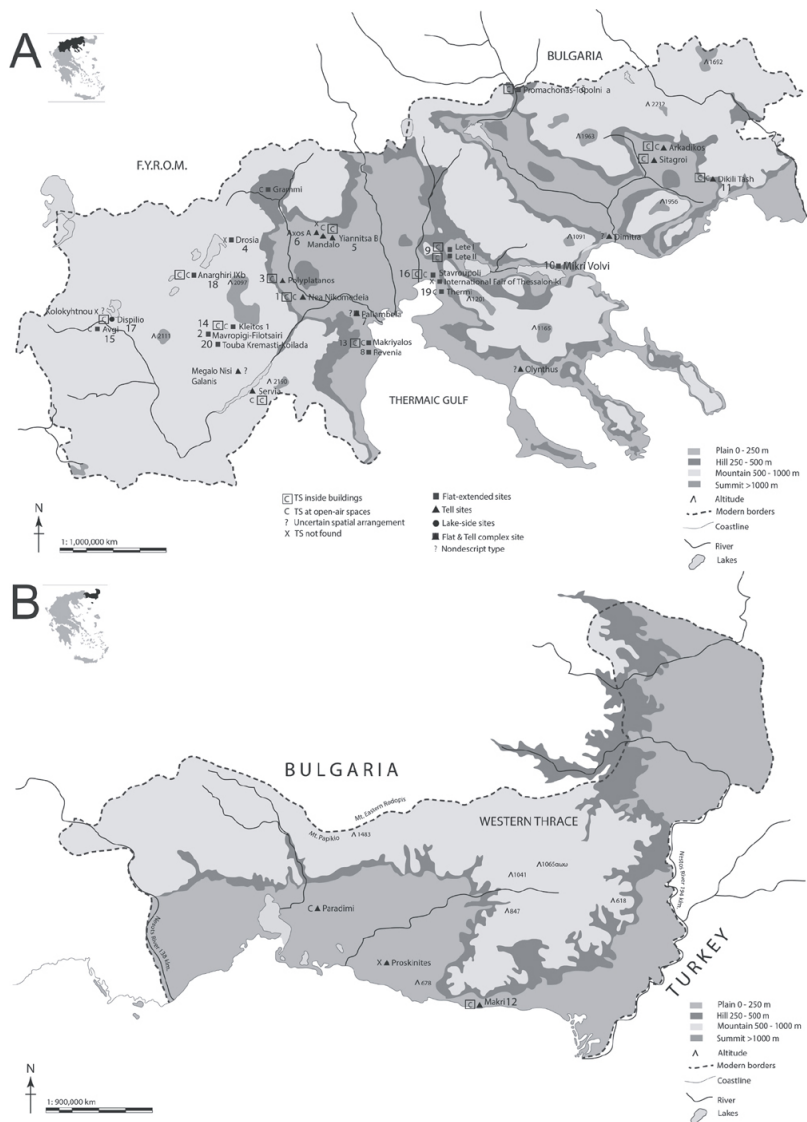


Figure 2.2. Distribution of sites in northern Greece. A) Macedonia; B) western Thrace. Numbered sites are in the order they appear in the text: 1. Nea Nikomedeia; 2. Mavropigi-Filotsairi; 3. Polyplatanos Imathias; 4. Drosia; 5. Yiannitsa B; 6. Axos A; 7. Paliambela; 8. Revenia; 9. Liti I and II; 10. Mikri Volvi; 11. Dikili Tash; 12. Makri; 13. Makriyalos; 14. Kleitos; 15. Avgi; 16. Stavroupoli; 17. Dispilio; 18. Anarghiri IXb; 19. Thermi; 20. Touba Kremasti-Koilada.

Location in the landscape

It is difficult to estimate how much of the Neolithic landscape has now been lost to archaeological research; however, some broad trends in settled landscapes can be discerned, mainly based on occupation density in different regions or chronological periods. Charcoal analyses in Neolithic sites in northern Greece show that for much of the Neolithic, the landscape was more or less covered by open, mixed oak woodlands (Ntinou 2008; Ntinou and Badal 2000). Early Neolithic settlements were mainly dispersed in alluvial plains close to water sources, like small basins with lakes or marshlands, and river valleys (Andreou *et al.* 1996, 575). From the late sixth millennium cal BC onwards a greater variety of landscapes were settled, while in certain regions, like Kitrini Limni and Langadas plain in west and central Macedonia respectively, sites clustered within a range of a few kilometres. Habitation in fertile lowlands continued over the MN and LN, including occupation of higher ground and mountainous environments, the establishment of lake-side or lacustrine settlements and new sites on coastal plains (Andreou and Kotsakis 1987; Andreou *et al.* 1996; Demoule and Perlès 1993). Additionally, a number of sites located close to natural routeways or river crossings possibly supported regional networks and important trails (Andreou *et al.* 1996, 575; Hondroyianni-Metoki 1993, 116; Ziota and Hondroyianni-Metoki 1993, 34).

Settlement organisation

Settlements consist of the key formations in which Neolithic communities organise and conduct their everyday routine practices. This is emphatically demonstrated in enclosed settlements. During the Neolithic period in northern Greece, ditches constitute the main form of demarcation practices, chiefly identified in flat-extended sites in western and central Macedonia. Ditches are recognised in various outlines and have been spatially traced in different areas within or at the periphery of a settlement.

Such examples are recorded at Makriyalos in Pieria, where a double concentric row of ditches, ditches Alpha and Beta, and a third ditch Gamma, which possibly served as internal partition, were excavated (Pappa and Bessios 1999). Two parallel ditches were found enclosing the Neolithic settlement of Avgi in Kastoria (Tsokas *et al.* 2005), while at Kleitos in Kozani a few shallow ditches were set at the southern boundary of the settlement (Ziota in press). In the MN, Paliambela in Kolindros was defined by a network of deep ditches that were subsequently abandoned and replaced during the LN by the construction of two concentric stone perimeter walls that encircled part of the settlement (Kotsakis and Halstead 2002).

Palisades have been recently documented in lacustrine and lake-side sites, such as Anarghiri IXb in the Amyntaion basin, Florina (Chrysostomou *et al.* 2015), suggesting that diverse forms of enclosures were chosen as a recurrent practice that clearly outlined and set the boundaries of the living space. There are no indications to date whether, and if, people demarcated their communities in eastern Macedonia and western Thrace. Despite their use as boundaries, ditches are sizeable features, which involved considerable labour investment in their digging and maintenance and stand as landmarks for the people within and outside the settlements. Ditches were integrated into daily individual or group practices by serving as waste areas, cisterns for the storage of water and as areas where soil for the construction of buildings, thermal structures and other items was extracted (Hondroyianni-Metoki 2009; Pappa and Bessios 1999). Primary burials or scattered disarticulated skeletal remains have been found in the deposits of ditches Alpha and Beta at Makriyalos, incorporating these features in the symbolic and ritual performances of the Neolithic settlers (Triantaphyllou 1999).

Architecture

Variability of house forms, construction techniques and materials

constitutes the key characteristic of architecture throughout the Neolithic period in northern Greece. Three main building types are documented, reflecting diversity in the organisation of daily life together with the various forms of sociality developed in these communities. Although not restricted to this horizon, pit dwellings have been regularly associated with the initial occupation of a site and often give way to groups of spaced rectangular houses. This is the case at Makriyalos, Stavroupoli and Paliambela in central Macedonia. Moreover, pit dwellings are often considered as related to a more mobile lifestyle (Halstead 2005) and are primarily associated with flat-extended rather than tell settlements. They are an architectural phenomenon that seems to mainly characterise central and western Macedonia. Loose groups of pit houses occupied dispersed areas, leaving wide open-air spaces and courtyards among them. On the other hand, rectangular or square post-framed structures represent the most common dwelling types throughout the Neolithic in all regions of northern Greece. These are subterranean or above-ground, primarily single-roomed buildings; partitions into two or three rooms are less frequently documented. Fire installations are regularly, although not necessarily, part of the internal household arrangements. Post-framed buildings on platforms have been identified in lake-side or lacustrine settlements, unfolding yet another variant of social and everyday organisation within Neolithic communities. Examples of such architectural forms are limited to date. However, such buildings are known from the lacustrine site of Dispilio in Kastoria (Hourmouziadis 2002), as well as from the recently excavated settlement Anarghiri IXb in the Amyntaion basin, Florina (Chrysostomou *et al.* 2015).



Figure 2.3: Example of building and thermal structure associations from the Neolithic site Avgi I in Kastoria. Large-scale plan showing building plans, building daub dispersals, and thermal structures found single or in clusters, in open-air spaces. (Kalogiropoulou 2013, v. 2).

In contrast to the Paris basin, the Neolithic in northern Greece is not characterised by large-scale architecture. Post-framed dwellings have an average size of $8 \times 9\text{m}$, whereas the typical diameter of pit dwellings does not exceed 4m . Regarding construction techniques and materials, recent research demonstrates that there is a plurality of ways in which Neolithic builders chose to shape their living space (Kloukinas 2014). Buildings were made with stone foundations or wooden posts of thin tree trunks, while wattle-and-daub was a prominent technique for wall construction. The building and preservation of dwellings demanded considerable work, while their social and symbolic value had a considerable impact on the course of everyday living. Orientation and house openings are not standardised, underlining a wide differentiation in living form among communities. To date, the available data on building characteristics and internal arrangements have not led to the documentation of discernible geographical or chronological patterns.

External space

The identification and documentation of flat-extended settlements in northern Greece has recently revealed the significance of open-air spaces in the organisation of daily performances and social interaction in the region. The recent turn to studying external spaces has succeeded a period of house-centred studies and expanded our understanding of how Neolithic communities were operating. The importance of open-air spaces is often emphasised by the construction of pebbled-paved or clay-paved yards that were regularly closely associated with dwellings. Evidence of such architectural remains has been recorded at Thermi and Paliambela, as well as at Kleitos, in central and western Macedonia respectively (Kotsakis and Halstead 2002; Pappa 2008; Ziota in press). Often these courtyards were defined by networks of ditches, palisades or wattle-and-daub walls to separate, and perhaps even emphasise, the activities carried out, distinct from the rest of the settlement. People chose to create loose or dense spatial arrangements, maintaining unbuilt spaces among their houses, where, among other activities, they also practised daily domestic routines. The number of sites where cooking facilities have been identified in open-air spaces is increasing, indicating different household perceptions of private and public performances, varied social structures and dissimilar lifeways. Throughout the Neolithic in northern Greece, cooking facilities have been recurrently documented in open-air spaces either in clusters, forming outside kitchen areas and gathering places, or singly, often directly associated with buildings (Kalogiropoulou 2013; 2014) (Fig. 2.3). Evidence for hearths and ovens in external spaces suggests that certain household activities, like the preparation and consumption of food, often constituted public acts visible to the wider community, providing us with a keyhole view of the diverse ways societies organised their everyday routines.

Waste pits are regularly found in the context of Neolithic settlements. The association of these pits with specific households

is difficult, however a degree of waste management can be recorded. The site of Touba Kremasti-Koilada in Kozani offers the opportunity to address issues of non-domestic use of space during the Neolithic, as reflected by special structured depositions. Excavation at this LN site brought to light 462 pits and a system of ditches, while no dwellings were found in the excavated area (Hondroyianni-Metoki 2009; Tzevelekidi 2012). Based on survey results, it is believed that this scatter of borrow-pits and ditches constitutes the north-eastern edge of an as yet unexcavated settlement, representing an interesting example of spatial planning and organisation of activities within a community. Another instance of structured deposition is the case of pit 212 at LN Makriyalos, where evidence of large-scale feasting is documented (Pappa *et al.* 2004).

The Paris basin

Summary of chronological sequence

The Neolithic of the Paris basin begins with the arrival of the *Linearbandkeramik* (LBK) culture from the east, most likely with migrating farmers from the Rhine and Moselle river valleys. This regional and chronological group is known as the *Rubané récent du bassin parisien* (RRBP; c. 5100–4950 cal BC; Fig. 2.4). This phase was preceded by an initial colonisation of the eastern edges of the region, during what is classed as the ‘middle’ LBK in the central areas of its distribution (Ilett 2012). This is most likely to have taken place in the century before 5100 cal BC, but there remain many uncertainties in the radiocarbon dating (Dubouloz 2003; Ilett and Meunier 2011; Jadin 2007). The cultural sequence from this point is debated, with two competing models. In one model the RRBP endures for one or two centuries, until c. 5000 cal BC (when the LBK more widely is thought to have come to an end), at which point the *Blicquy/Villeneuve-Saint-Germain* (BQ/VSG) cultural repertoire evolves, showing strong links with the LBK and

currently thought to last until c. 4700 cal BC. In an alternative model, the BQ/VSG develops contemporary to the end of the RRBP, in the hands of a cultural group independent to the LBK population, which nonetheless blended elements from this way of life with those from the southern French Cardial (Jeunesse and van Willigen 2010). Given strong typological links, some form of chronological sequence is probable. However, the presence and extent of any chronological overlap between the two groups will need a renewed program of radiocarbon dating, as current dates remain problematic (e.g. conventional dates on bone, unidentified charcoal, etc.).

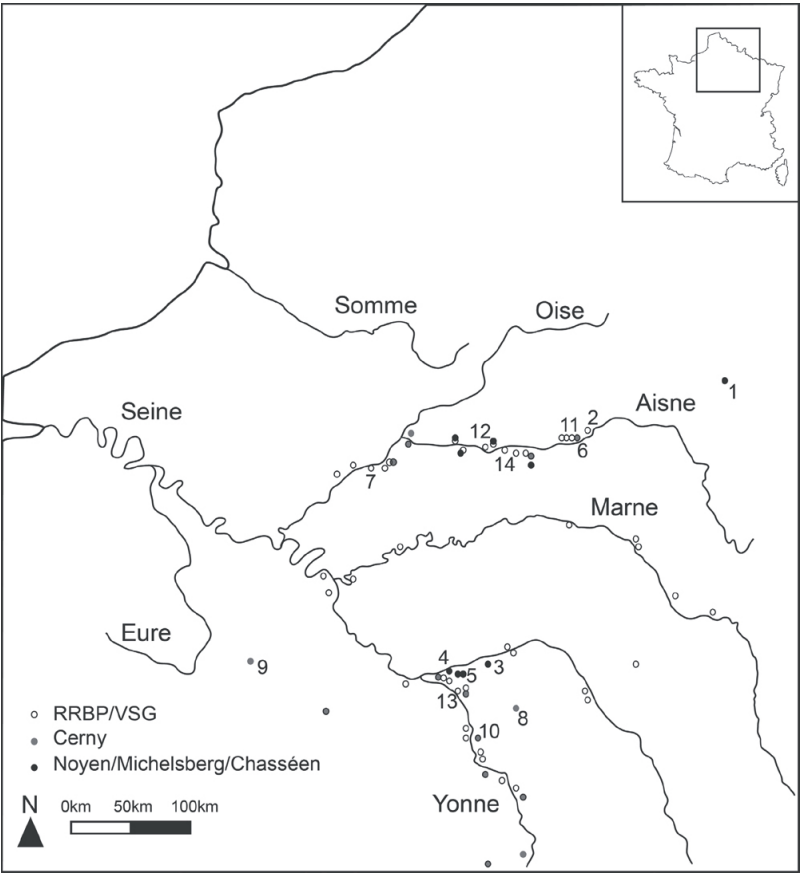


Figure 2.4. Distribution of sites in the Paris basin. Numbered sites are

in the order they appear in the text: 1. Mairy; 2. Menneville; 3. Noyen-sur-Seine; 4. Gravon; 5. Balloy; 6. Berry-au-Bac ‘Le Vieux Tordoir’, ‘La Croix Maigret’ and ‘Le Chemin de la Pêcherie’; 7. Pont-Sainte-Maxence ‘Le Poirer’; 8. Molinons; 9. Auneau; 10. Passy-sur-Yonne; 11. Cuiiry-lès-Chaudardes; 12. Bucy-le-Long ‘La Fosselle’; 13. Villeneuve-la-Guyard Prépoux; 14. Pontpoint Le Fond de Rambourg II.

The disappearance of the BQ/VSG marks the end of the ‘Danubian’ Neolithic in the Paris basin. In the terminology usually used in the region, the early Neolithic is followed by the *Néolithique moyen* between c. 4700 and 4300 cal BC, and the *Néolithique récent* (c. 4300–3500 cal BC; Demoule *et al.* 2007). The first cultural group is named the Cerny (c. 4700–4300 cal BC), followed by three largely contemporary groups which seemingly overlapped geographically: the Noyen, Michelsberg and the northern form of the Chasséen culture (c. 4300–3500 cal BC; Demoule *et al.* 2007). Although houses continue to be constructed throughout the *Néolithique moyen* and *récent*, the villages of longhouses that characterise the early, ‘Danubian’ way of life, are not seen again; rather, ditched, palisaded and causewayed enclosures dominate, with long timber-built longhouses returning during the later phases (e.g. the large structures found inside the Mairy enclosure (Ardennes), some up to 40m long; Marolle 1998).

Settlement practices in the Paris basin

Several trends in settlement practices can be identified across the Neolithic in the Paris basin. For the scope of this paper, the focus will fall here on how these changes could have influenced daily practice with architecture and settlement. In broad summary, settlement practices can be characterised as a move towards greater diversity in the landscape settled, in structures built and in the duration and size of settlements (Bickle 2008). The settlement evidence is characterised in the early Neolithic by settlements of

longhouses, with causewayed and palisaded enclosures growing in number and coming to dominate if not the evidence, then certainly the cultural milieu (Constantin *et al.* 1997). These changes can be cast as a move from commitment to building large-scale domestic architecture in the early Neolithic towards more elaborate enclosure and funerary structures from the middle Neolithic onwards. Several trends in particular practices are picked out here as particularly relevant to understanding the Neolithic archaeology of this region: the location of sites in the landscape, settlement organisation, architectural form and depositional practices.

Location in the landscape

As with other LBK regions, early Neolithic settlements in the Paris basin were almost all built in the same geographical location, on the gravel terraces above the floodplain, on fertile soils, but still close to the main rivers. Pollen cores from the Aisne valley suggest that Neolithic communities had a localised impact on the landscape around them, with significant opening of the landscape only coming at the end of the Neolithic (Bakels 1995). For much of the Neolithic, the landscape was covered by dense deciduous forests of elm, oak and hazel (Chartier 2010; Leroyer 2006; Perrière and Leroyer 2006). Settlements were set into natural or anthropogenic clearings, stretched out at irregular intervals along the river valleys. After the early Neolithic, a greater variety of landscapes was settled, including higher ground for the first time since the Mesolithic. Some patterns in the siting of enclosures could be suggested. Along the Seine and Yonne river valleys, middle and later Neolithic enclosures seem to cluster around the confluence of these main rivers and their tributaries, irrespective of whether they are situated on the valley floor or higher ground, possibly where the river was easier to ford or cross (Dubouloz *et al.* 1991). Changing routines of movement through the river valleys can be envisaged from the early to the middle Neolithic,

from along the valley to new routes that crossed the rivers and plateaus of higher ground.

Settlement organisation

At early Neolithic settlements all longhouses shared a similar orientation, with the entrance at the south-eastern end of the house, which may have served to homogenise everyday and routine movements around the settlement (Whittle 2003). Entrances are sometimes 'elaborated', evidenced by particular arrangements of posts suggesting porch-like structures. At sites across the western distribution of the LBK (chiefly Germany and France), changes in house orientation accompany settlement reorganisation, suggesting that orientation may have also been contingent on community histories (Cladders and Stäuble 2003, 501) and certainly a shared action across the settlement. At VSG villages, houses were arranged in rows, which may have served to emphasise the entranceways of all houses at once and created an impressive façade for any visitor to the village.

Although causewayed enclosures are found contemporary to later phases throughout the LBK (such as Menneville, Aisne valley), in this region their numbers increase significantly from the Cerny period (middle Neolithic; Dubouloz *et al.* 1991). Our understanding of these sites is hindered by a lack of critical knowledge regarding the formation of deposits at these sites (Midgley 2005, but see Lefranc *et al.* this volume). The enclosures are varied both in their layouts and deposits, which ranged from highly structured to extremely eroded assemblages of domestic remains (Dubouloz *et al.* 1991). A unified explanation for the presence and activities at enclosures is therefore difficult to find, if desirable at all (Lefranc *et al.* this volume). Within the English-speaking tradition, continental European enclosures have been seen as places of social and ritual transformation, developing out of particular associations of the longhouse and the wider community (Whittle 1996). However, within the French tradition

enclosures are considered to be domestic sites, frequently defensive in character (Dubouloz *et al.* 1991; *cf.* Midgley 2005) and a phenomenon entirely separate from the architectures found during the early Neolithic. The enclosures in the Paris basin are thus characterised as the strategic approach taken by separate communities to the exploitation of different territories along the river valleys (Delor *et al.* 1997; Dubouloz *et al.* 1991), with the pairing of enclosures along the Seine (eastwards from its confluence with the Yonne) regarded as part of this territorial management of the landscape (Delor *et al.* 1997; Mordant and Mordant 1988). D. Mordant (1997) argues that the burial record at this time also indicates increased social complexity in the Cerny period, suggesting more structured and regularised hierarchies.

Each enclosure differs significantly, but the details of these differences remain elusive, as most of the sites are known from aerial photography (Dubouloz *et al.* 1991, 216). At excavated sites, different structures and deposition patterns are redolent of different patterns of movement. The entrances to the enclosures at Noyen-sur-Seine and Gravon differ both in number and in whether gaps in the palisades align with causeways in the enclosure (Mordant and Mordant 1988, 237). At Balloy, the notion of movement also seems to be played out in the ceramic assemblage, as the vast majority of pots seemingly arrived in a broken condition (Andersen 1997, 222), hence suggesting that material from numerous different locations was gathered at the enclosure.

Architecture

Early Neolithic longhouses were timber post-built structures displaying both closely followed style patterns and moments of variation (Coudart 1998). They were on average 20m long and 6–7m wide (Bickle 2008). Notably, orientation, the tripartite partitioning of the interior and the arrangement of internal posts in rows of three appear to be structuring rules (Coudart 1998), while variations in length and ground plan provide scope for

visible differentiation between houses (Bickle 2008) (Fig. 2.5). In stark contrast to the preceding period, only a handful of Cerny structures are known from the Paris basin: three longhouses from Berry-au-Bac ‘Le Vieux Tordoir’ (Dubouloz *et al.* 2000), a square structure from Pont-Sainte-Maxence ‘Le Poirier’ (Prodeo *et al.* 1997) and a linear ditched feature with evidence for post lines at Molinons (Prestreau 2003, 8). Some enclosures, such as the two at Noyen-sur-Seine, may have evidence for slight structures that could possibly be interpreted as buildings (Dubouloz *et al.* 1991, 214). The longhouses being constructed now abandon a number of features associated with earlier longhouse architecture: shared orientation, the tripartite model, ‘three-posts-in-a-row’, trapezoidal shapes and the associated loam pits. The three Cerny houses at Berry-au-Bac ‘La Croix Maigret’ have no accompanying pits (Allard *et al.* 1995), while the possible houses at Molinons (Prestreau 2003) and Pont-Saint-Maxence ‘Le Poirier’ (Prodeo *et al.* 1997) have associated pits which do not take the form of loam pits (i.e. they are not placed along the walls but cluster nearby).

There are seven instances of round structures in northern France that may be associated with the Cerny culture (Verjux 2007, 211–4). The material found in the wall trenches of a round Cerny house at Auneau (Eure-et-Loire) suggests that domestic activity was of relatively short duration (Agogu   *et al.* 2007, 198) and the lithics demonstrate a focus on hunting and butchering of animals (Agogu   2007, 207), suggesting a difference in the temporalities associated with the RRPB/VSG and Cerny houses. Many Cerny sites are only known from a limited number of pits, which never exceed a diameter of 2m and are rarely deeper than 0.5m (Prodeo *et al.* 1997, 171). This may indicate that a slighter architecture was constructed, but has not been preserved. Seemingly in the place of longhouse architecture, large ditched enclosures, many with substantial lengths of palisade, became the focus of deposition, while the unique Passy monuments were constructed along the Yonne valley in the southern part of the

Paris basin (Demoule *et al.* 2007, 57; Midgley 2005).

Deposition

The archaeological visibility of LBK settlements is due in part to the remains which collected in the loam pits either side of the longhouse. Elsewhere in the LBK distribution, material is also found in pits across the settlement, but in the Paris basin, nearly all remains come from the loam pits beside houses (Ilett *et al.* 1986, 137). Although these pits undoubtedly suffered serious erosion, the objects recovered represent almost the entire range of RRBP and VSG material culture: pots and other ceramics, flint, fragments of stone bracelets, animal bones, worked bone and shell (Constantin 1995; Coudart 1998; Hachem 1997; Ilett *et al.* 1986). These are occasionally accompanied by burials, which are almost exclusively either children or fragments of human bone (Pariat 2007).

The general assumption has been that the material found within these pits represents the ‘rubbish’ of daily life: the sweepings from the house floors and remains from routine tasks deposited in a convenient location close to the house. However, attitudes that regard these materials as symbolically inert reproduce western and modern ideals of cleanliness and the discard of waste. It is very likely that the materials in LBK loam pits were potent and active in creating differing experiences of the settlement and the areas in between and around the houses (Gomart *et al.* 2015; Hachem 1997). The patterning found within loam pits suggests that routine activities were creating particular concentrations of material.

Routine practices of deposition occurred in certain preferred choreographies, but they were by no means exclusive. Of the 23 houses at Cuiry-lès-Chaudardes whose loam pits have been studied, a tendency for material to be placed on the southern side of the house has been identified at 15 (Constantin 1995, 151; Ilett *et al.* 1986). At Bucy-le-Long ‘la Fosselle’ (Aisne), Boiron (2007,

305) found that the places of deposition were neither regularised nor repeated between households and concludes that each household arranged the spatial location of its own tasks. The tendency to southern deposition is, however, also found at Berry-au-Bac ‘Le Chemin de la Pêcheurie’ (Constantin 1995, 151) and this may demonstrate that, like the ‘three-posts-in-a-row’ ideal from the internal house layout, certain routines can be identified.

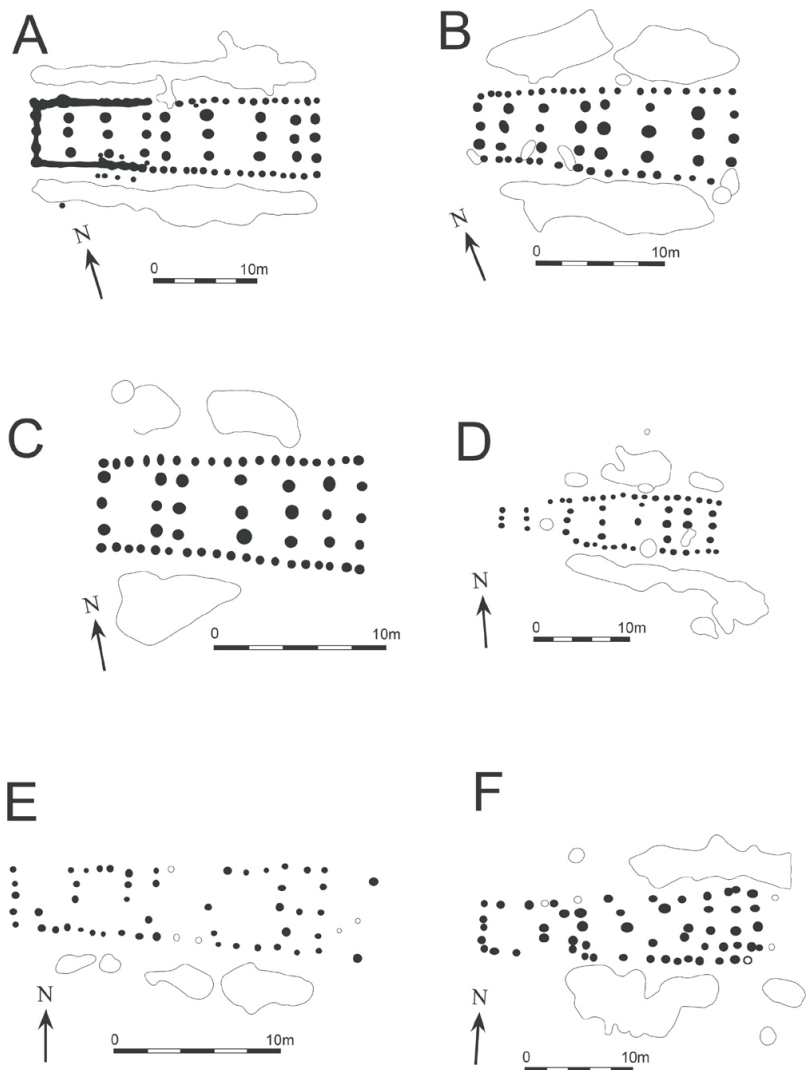


Figure 2.5. Examples of longhouse plans from the RRBP (A–C) and

VSG (D–F) in the Paris basin (after Bickle 2013, fig. 8.2). A. house 245, Cuiry-lès-Chaudardes (Soudský *et al.* 1982, fig. 52); B. house 200, Berry-au-Bac ‘Le Chemin de la Pêcherie’ (Dubouloz *et al.* 1995, fig. 7); C. house 410, Cuiry-lès-Chaudardes (Ilett and Coudart 1982, fig. 3); D. house 580, Berry-au-Bac ‘Le Vieux Tordoir’ (Allard *et al.* 1995, fig. 4); E. house 1, Villeneuve-la-Guyard Prépoux (Prestreau 1992, fig. 5); F. house 50, Pontpoint ‘Le Fond de Rambourg II’ (Bostyn *et al.* 1996, fig. 1).

The activities and routines that took place at enclosures explored very different temporalities to longhouses. Decay and disintegration are far more temporally immediate and manipulated at enclosures, with the active breaking of materials and bodies and their subsequent distribution across the site, while at longhouses such practices were developed over time through everyday routines which layered and mixed material along the sides of the houses (Bickle 2008). However, palisades may have decayed in much the same way as the posts of longhouses and if, as Dubouloz *et al.* (1988, 176) argue, the palisades were accompanied by banks, enclosures could have echoed decaying longhouses in some respects.

Therefore, although at first glance enclosures appear to reflect notions of larger community-based practices rather than those based on the household, they drew explicitly on experiences associated with the everyday in the early Neolithic (working with wooden posts, digging pits, structured and unstructured deposition). While enclosures seem to have been developed through widening notions of community, the broader scale at which this occurs conversely allows the particular configurations of material that were deposited together to be brought together deliberately, selectively and immediately, not requiring the layering together of everyday concomitant relationships through the house. Enclosures in the Paris basin therefore provided a forum at which small-scale concerns and relationships could be

created, manipulated and broken, tying in with the changing speeds, scales or direction of movement that centred in and through the performances at them.

Discussion: comparing settlement practices

Settlements as places of primary learning (e.g. personhood, animals and the properties of materials) are important for the constitution of particular worlds (Robb 2013; Souvatzi 2008; Whittle 2003). Taking the materiality and daily use of the spaces created in and between built structures seriously has led us to attend to different facets of settlement practice in the two regions discussed above, but a number of repeated themes can be highlighted. In bald summary, both regions share long-term trends to increased diversity in various aspects of settlement practice over the course of the Neolithic, particularly in landscape use and settlement organisation. In both regions the early Neolithic is characterised by the exploitation of a restricted range of landscapes, followed by the move to settle more diverse environments. While subject to different climatic variables and landscape cover, early Neolithic groups sited settlements close to rivers and in a forested environment, only later settling other zones. Another strong similarity is the partition or demarcation of space through ditches and palisades. In both regions, such 'boundaries' could at times be elaborate, complex and multi-phase, with stone walls appearing in the later Neolithic of northern Greece. Another similarity is the practice of placing burials in the boundary ditches (sometimes in the form of disarticulated remains), which also appear to have been sites for ritualised deposition. While the importance of partitioning settlement space could suggest that policing boundaries between settlement and non-settlement was significant in the Neolithic, their partial form and the ways in which they are used, renewed and encountered on a daily basis speak to a less rigid division. We propose that

enclosure ditches and fence-like features began as explorations in forming community spaces, responding perhaps to the need to actively 'perform' community in order to create and negotiate its constituting relationships (Whittle 1996; see also Lefranc *et al.*, this volume).

Daily life, however, was experienced and elaborated in different ways through settlement practice in the two regions discussed. In the Paris basin, the majority of settlements were less dense than most of the northern Greek settlements, with external or outer spaces in the form of enclosures coming to dominate over household architecture across the duration of the Neolithic. In the early Neolithic, soil erosion could have destroyed some shallower settlement features in the Paris basin, but the deposition patterns discussed above do suggest that households were influencing each other on a daily basis. The overall impression from the arrangement of houses, their similar forms and daily routines of deposition is that in the early Neolithic a tension may have existed between independent households and the broader collective of the 'village community'. In the later periods of the Neolithic, settlement activities begin to leave a material presence more strongly in the form of ditched enclosures, suggesting that it is 'community' which is carried forward through time, subsuming individual households. In northern Greece, external space was more carefully demarcated, with evidence for plenty of potentially shared activities and routines on a daily basis. Use of the space around and between houses may have been co-created with the construction of paved yards and boundaries created by ditches, palisades and wattle-and-daub partitions. Such careful attention to community spaces and to building may have arisen from the particular setting of settlement practices, with tells and flat settlements providing different forums for negotiating and elaborating community and group relationships. The increasing evidence for open-air food preparation and cooking suggests that such practices formed a strong part of daily routine and

performances at settlements in northern Greece. Therefore, while we have identified some similarities in the enclosure practices, rather than in households, perhaps originating in the new forms of community that developed during the Neolithic, this was experienced and materialised in very different ways between the two regions.

One of the strongest differences between the regions is found in house architecture. In northern Greece, houses were diverse, both in terms of layout and the materials chosen for construction. As a result, structures would have had different temporalities of duration and repair cycles, although year-round or mobile living is not directly reflected in building forms, practices, such as transhumance with animals, would have guided settlement routines, with comings and goings over the course of the year. Pit houses and above-ground structures often only featured one single internal space. This is not to argue that households were not an important part of Neolithic life in northern Greece, but we suggest that neither the household nor the broader community were prioritised. Thrown into contrast with the evidence from northern Greece, the uniformity of the early Neolithic longhouses in the Paris basin is quite striking. The apparent independence of the household in this region can therefore be contrasted with the regularity of design, orientation and – although lack of evidence makes this point speculative – the materials of the above-ground wooden structure. The world inhabited by the LBK and VSG was strongly framed by these structures and their construction. The materials of the longhouse – large trunks selected from the forest for the central posts, smaller pieces for walls and the roof, daub and presumably thatch as well – and their temporalities (e.g. of repair or decay) were a lens through which daily life was entered into, negotiated and performed, but was it a form of ‘ontological’ reality?

Houses and settlements are not fundamental properties of the world, but they are a response to the particular conditions of

relationships humans form with the world. Kohn (2015, 317) argues that in the modern West, our ontological reality of personhood is based on the difference between our own interiority and those of others (e.g. externally we can be quite similar, for example by wearing similar clothes, but internally we remain unique). Following this, we argue here that in the Paris basin in the early Neolithic, community was founded on an ontology in which the interiority of households was the significant point of difference, while community was externally created. In northern Greece, in contrast, household and community were co-forming. The varied materials, temporalities and organisations of the spaces that formed daily routines at settlements in this region suggest that points of difference may have come to the fore through varied daily activities and performances. This is not to argue that such daily routines were insignificant in the Paris basin, but rather to suggest that they were framed in different ways, primarily through the relationship between the house and broader community.

Conclusion

The similarities identified between northern Greece and the Paris basin are a shared long-term trend to increasing diversity in settlement practices, the development and elaboration of enclosure and, through this, a shared commitment to working on and negotiating settlements as places of community construction. However, there are also distinct material, spatial and temporal differences in architecture, settlement organisation and the use of external space. We therefore conclude that although houses and settlement practices were essential agents of changing social relationships in both regions (Robb 2013, 665), the underlying ontologies surrounding settlement practice were different. The daily practice at settlements appears to be informed by varied and multiple *histories*, with communities in the two localities building and responding to histories of place. Here we return to Whittle's

(2000, 255) conclusion from ‘Very like a whale’: ‘from place to place [the Neolithic] seems to be to do with how people regarded themselves, animals and other elements of their surroundings, rather than with the workings of a disembodied economy and technology’. In the place of a shared Neolithic ontology, we call for a reorientation of the Neolithic away from being seen as primarily a cultural or social mentality, ontology, technology or economy, but rather as a ‘history’ formed by analogies and antitheses.

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The end of the tells: the Iron Age 'Neolithic' in the central and northern Aegean

James Whitley

Introduction

In order to understand the beginning of a phenomenon it is sometimes useful also to consider its end. Tell settlements are indelibly associated with the Neolithic of the Balkans, and (perhaps inevitably) have been seen as 'ancestral' (since they do not build up naturally). Tells however were not just used in the Neolithic period in northern and central Greece – tells were in use throughout the Bronze Age and into the Iron Age. Indeed some were not finally abandoned until the second century BC. This paper will look at several tells in northern and central Greece to see if there is any rhyme or reason to their final abandonment – the 'trinity' of central Macedonian tells that last into the Iron Age

(Assiros, Toumba Thessalonikis and Kastanas) and Lefkandi on the island of Euboea (Fig. 3.1). The paper will try to explore why tells were abandoned, and what this tells us about why they were so important in earlier times.

Every period or area covered by archaeological research has its icon; an image which, in the public mind, sums up the ‘essence’ of that period. For Classical Greece, that icon remains the Parthenon. For the Neolithic it rather depends where you are. For Britain, the Neolithic is usually summoned up with a picture of some megalithic monument – West Kennet long barrow or Avebury for Wessex, the Ring of Brodgar or Maes Howe for Orkney (to name the two regions which, again, are most ‘iconic’). For Anatolia and the Balkans, the icon is somewhat different. It is the tell site – or tell settlement – that best sums up what the Neolithic stands for in this region, whether it is Çatalhöyük on the Konya plain or Karanovo in central Bulgaria, Vinča in Serbia, Sitagroi in the plain of Drama or Sesklo and Dimini in Thessaly. These are the ‘type sites’ that summon up whole cultures (in the Childean sense), and with which Alasdair has dealt so masterfully in his general survey of Neolithic Europe (Whittle 1996, 37–143).

And tells last, and do so mainly as a result of human agency. Of course, not all human-made mounds are tells: the middens of later Bronze Age Britain (such as the one at Potterne in Wiltshire), which sometimes reached a height (or depth) of 5m, seem to have built up not through occupation but through repeated, seasonal events associated with feasting (on this see Madgwick 2016; Madgwick and Mulville 2015; Waddington 2008). Such middens have gaps in their sequence. Similarly, scholars of the Neolithic Balkans (e.g. Bailey 1999; Chapman 2008) have emphasised that tells were not necessarily occupied continuously and that tells have to be understood in relation to other settlement types. It is not necessarily ‘natural’ to live above the detritus (and sometimes the remains) of previous generations. Tells are artificial constructions, the result of deliberate (if not always conscious)

choice on the part of their inhabitants, especially since, in most of the regions of the Neolithic Balkans, other forms of settlement existed (Whittle 1996, 37–143). Tells have as much to do with social memory (Chapman 2008) as with settlement, since ‘tells objectified land and time and the relationship between time, space and resources’ (Bailey 1999, 108). Whether Neolithic tells were either ancestral or elitist (or both) is a question I will defer to the end of my paper. Certainly, during their later phases as tells build up, and the space on the top becomes more confined (especially in smaller tells), the issue of who actually can live ‘on top’ must have become real and pressing.



Figure 3.1. Plan of the Aegean showing sites mentioned in text. 1. Chalkis (in Euboea); 2. Lefkandi, Xeropolis; 3. Eretria; 4. Amarynthos; 5. Zagora on Andros; 6. Emporio on Chios; 7. Olynthos; 8. Kanabournaki; 9. Toumba Thessalonikis; 10. Saratsé (Perivolaki); 11. Assiros toumba; 12. Anchialos (the 'double table') near Sindos; 13.

This may have been a concern that extended beyond the Neolithic. Tell settlements outlast that particular cultural configuration based on polished stone tools, hoe agriculture and limited plant and animal domestication. When the use of metals becomes widespread, tells are not necessarily abandoned. In south-east Bulgaria, the Ovcharitsa tell on the Maritza was occupied down into the Iron Age (Kuncheva-Ruseva 1991).¹ In northern Greece (which is the principal subject of my paper) new tell sites seem to have been established during the Bronze Age and many of these last well into the Iron Age. When in the Iron Age were they abandoned? Here we run into difficulties. One is the problem of relating a chronological scheme in Classical archaeology based largely on stratigraphy and cross dating (for which see Whitley 2001, 60–74) to one in prehistory based largely on radiocarbon. A second is that there are major disagreements about the radiocarbon dates we do have. Whilst the radiocarbon dates from Kastanas were calibrated (Willkomm 1989) and seemed to fit the conventional chronology fairly well, the excavators of Assiros (Newton *et al.* 2005) have suggested that the key date for the Bronze Age/Iron Age transition (marked by the appearance of Protogeometric pottery) should be moved from 1050 to around 1100 BC. However, a re-examination of the radiocarbon dates from the key central Greek sites of Corinth, Lefkandi and Kalapodi, concentrating on short-lived samples from closed contexts and making use of Bayesian statistics (Toffolo *et al.* 2013), has if anything confirmed the traditional chronology for the Aegean early Iron Age. For this reason I will be sticking with the established chronology.

A further challenge we face is actually dating the abandonment of a tell. As Hänsel (2009) has reminded us, we are rarely able to detect the final phase of occupation of these sites, as

they have been subjected to extreme erosion. This problem is particularly acute in the case of the three tells close to Thessaloniki (Assiros, Toumba Thessalonikis and Kastanas) in present-day Greek Macedonia. But I want to begin with a site which is not normally thought of as a tell at all: Lefkandi Xeropolis.

The tell settlement of Lefkandi, Xeropolis

Lefkandi lies near the head of the southern gulf of Euboea, on the island of Euboea facing Boeotia. Its ancient name is not known, though it lies within the Lelantine plain between the cities of Chalkis and Eretria (Sackett *et al.* 1966, 60–1). Over the past forty years or so Lefkandi has become another ‘iconic’ site; iconic, that is, not of the Neolithic, but of the Greek Iron Age, and particularly of the (often fraught) relationship between Iron Age archaeology and Homeric studies (see for example Antonaccio 1995), and of the kinds of social memory that both sites and artefacts embody (see Whitley 2013). The site itself is extensive, comprising several cemetery areas (Skoubris, Palia Perivolia and Toumba). It is the cemetery and large structure at Toumba that has most exercised Iron Age archaeologists such as myself. But Toumba is not the main settlement of Lefkandi: that is Xeropolis.²

Lefkandi Xeropolis is a low hill that now sits right over the sea, about 6ha in extent. Excavation began there in the 1960s under the direction of Mervyn Popham and Hugh Sackett (Popham and Sackett 1968). Only a small area of this large settlement site was opened up (in the north-east corner of the settlement; [Fig. 3.2](#)) and only the latest Bronze Age (LHIIIC) to Iron Age (Submycenaean, Protogeometric, Sub-Protogeometric and Late Geometric) levels have been completely published (Evely 2006; Popham *et al.* 1980, 1–25 and plate 4). Some features of the latest Bronze Age are reminiscent of Neolithic tells – notably the practice of intramural burials of both adults and children. These latest

levels none the less represent over 500 years of continuous settlement in the same place, with an accumulated depth of over 1m. During the excavations in the 1960s a sounding 8.5m deep was taken in the north-east part of the main trench, and this revealed a series of levels going back to the latest EHIII phase of the early Bronze Age (Popham and Sackett 1968, 6–11). These levels have yet to be published in full (though their results have been widely disseminated in, for example, Renfrew 2011 [1972], 103–5). What this deep sounding revealed is that Lefkandi Xeropolis is in fact a tell – a largely artificial mound where successive generations, in general, lived over the detritus of previous occupants.³ In the view of the excavators and most scholars closely involved with its publication, the site seems to have been occupied continuously from around 2100 BC through the entirety of the middle and late Bronze Age, down to the time of its final abandonment (Sherratt 2006, 304). Evidence for some periods however is rather scanty. While the early to middle Bronze Age (EHIII through to LHI) sequence is absolutely unbroken, evidence for the earlier part and middle parts of the late Bronze Age (Late Helladic II to LHIII B) is patchy at best. There may then have been partial breaks in occupation, which only more extensive investigation will reveal.

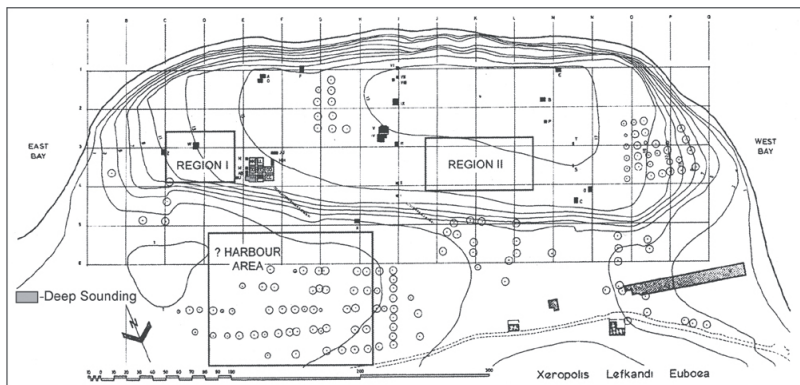


Figure 3.2. Plan of Lefkandi, Xeropolis (after Lemos 2007, 129 fig. 1) (reproduced with the permission of Irene Lemos and modified by Kirsty

Since 2004 there has been further excavation at Lefkandi, Xeropolis conducted by a team led by Irini Lemos of Oxford University (Lemos 2007; 2012). These excavations have been extensive and directed towards understanding the layout of the site in the Iron Age – they have been classic area excavations, which have not attempted to dig very much deeper into the tell itself. Geomorphological work on the peninsula to the north has however revealed that there were two bays, or lagoons, here in the Iron Age and earlier. This may be a factor in why the site came to be occupied in the first place.

When and why was it abandoned? As to the when, the latest Iron Age deposits (deposits with bichrome skyphoi) that have been published from the site seem to date to the final phase of the Euboean Late Geometric (Boardman and Price 1980). These are conventionally dated, on ceramic and other grounds (for discussion see Whitley 2001, 60–74) to just before 700 BC, ‘but possibly later’ (Boardman and Price 1980, 74). Recent excavations (Lemos 2012, 171) confirm that this Late Geometric occupation horizon is associated with a change from oval/apsidal structures to rectilinear ones. Along with these Late Geometric sherds were found some very early alphabetic graffiti (Jeffery 1980), which if anything seems to confirm this date. Even if we allow that some of the ‘Geometric’ (eighth century BC) pottery may be in fact ‘Sub-Geometric’ (early seventh century BC), and make some allowance for the latest levels having been eroded, we are still forced to conclude that this Late Geometric phase cannot have lasted beyond 650 BC. As to the ‘why’, explanations have largely focused on the formation of the two *poleis* on either side of Lefkandi that developed and expanded rapidly in the course of the eighth century BC – Chalkis to the north and west (Reber *et al.* 2004, 647–9 no. 365) and Eretria to the south and east (Reber *et al.* 2004, 651–5 no. 370). Ancient sources (Hdt. 5.99.1; Thuc 1.15.3)

speak of an early war between these two cities, fought over the fertile Lelantine plain (Strabo 10.1.9; 10.1.12) in which the site lies. Other factors may have been the silting of the two bays mentioned above, at a time when maritime trade (and 'colonisation') were becoming more important. And the rapid growth of the neighbouring cities of Eretria (Mazarakis-Ainian 1987) and Chalkis must have been drawn from somewhere.

But even if we allow that one or more of these factors might have led to the abandonment of the site, they do not seem fully to explain why it was never to be extensively and permanently re-occupied. Or at least, a very small part of it was re-occupied for a very brief period in the sixth century BC (Boardman and Price 1980, 78). Such re-occupation, or re-use, cannot have lasted for more than one generation before the site was finally and definitively abandoned. Being caught in the crossfire between two rivals may occasion flight, but why (when peace returns) not come back to your ancestral home? For some reason tell sites like these (and there are others; see Sackett *et al.* 1966) were not suited to the changed conditions of a more connected Mediterranean of the late eighth and seventh centuries BC. And Lefkandi seems not only to have been completely abandoned and then only briefly re-occupied; more importantly it was also not remembered. Unlike Amarynthos (Reber *et al.* 2004, 644), another Bronze Age tell site (Krapf 2011) close to which the sanctuary of Artemis Amarousia was founded,⁴ we do not know the ancient name of Lefkandi, Xeropolis.⁵ Unlike other (non-tell) settlements abandoned in the eighth and seventh centuries BC, its presence was not remembered through a later shrine being erected (as in the case of Emborio on Chios [Boardman 1967], Zagora on Andros [Cambitoglou *et al.* 1971]). Circa 650 BC, or perhaps (if we allow for the brief re-occupation) 500 BC, seems to mark the final end of the tell as a viable community form in central Greece.

The Iron Age tells of Greek Macedonia

That tells persisted during both the Bronze and Iron Ages in the area of Greek Macedonia was a fact established by W. A. Heurtley in the years after the First World War. Excavations of sites like Vardaroftsa (modern Axiochori; Heurtley and Hutchinson 1926; Cuttle 1927) established that the central tell site (the *toumba*) was often surrounded by a more extensive, and generally later settlement on a lower elevation (Fig. 3.3). Such *trapezes* (literally ‘tables’, rather than banks) were also slightly elevated above the ground surface. The relationship between *toumba* and *trapeza* is complex, but in general *trapezes* outlast *toumbes*. Heurtley also noted that some of these sites last for a very long time. Some he investigated, like Saratsé (modern Perivolaki) (Fig. 3.4), to be seen just to the north of the *Egnatia Odos*, were established in the Bronze Age and lasted only into the Iron Age, as indicated by the numerous Protogeometric sherds (Heurtley and Raleigh Radford 1930, 141, fig. 28). But ‘not a single Greek sherd’ (Heurtley and Raleigh Radford 1930, 149) was found. Others, such as Vardaroftsa, however seem to have been in use into Hellenistic times (Cuttle 1927, 229–32; Heurtley and Hutchinson 1926, 31).

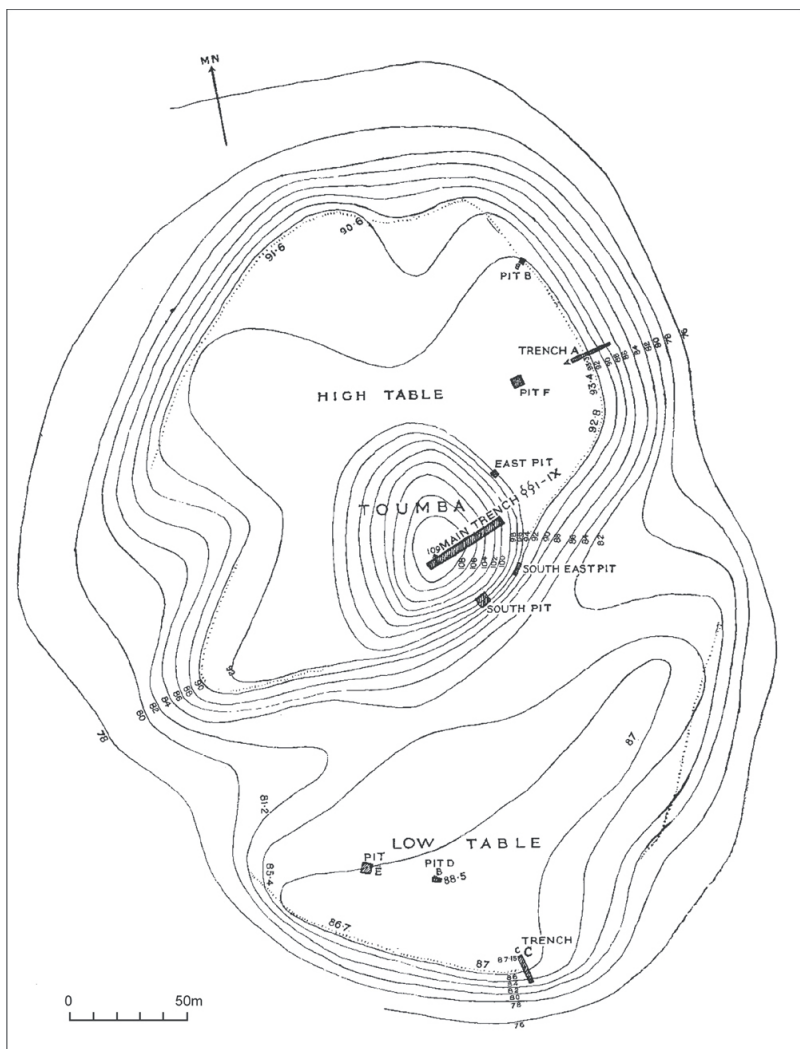


Figure 3.3. Plan of Vardaroftsa (modern Axiochori), showing the relationship between the central tell (toumba) and its surrounding tables (trapezes). After Heurtley and Hutchinson (1926, 7 fig. 6).

Of the three major sites which have been investigated scientifically from the 1970s onwards (Assiros, Toumba Thessalonikis and Kastanas) only Kastanas has been fully published. The excavators (Alix Hochstetter and Bernard Hänsel)

found the similarity between this site and perhaps the most famous *toumba* of all (Troy) to be irresistible. The site is numbered both in levels (from Schicht 1, the latest, to Schicht 19, the earliest fully excavated level datable to around 1600 BC, the end of the middle Bronze Age)⁶ and in successive 'settlement' levels, or 'cities' like Troy, the latest being Kastanas IX. I will be concerned simply with the later Iron Age levels, Schichten 8–1 (Kastanas VII, VIII and IX).

Kastanas VII (Schichten 8–5) seems to have been a substantial settlement with surprisingly large houses, built of mud-brick on stone foundations. In Schichten 8–6 (Hänsel 1989, 232–90) the rectangular houses had a central courtyard and superficially resemble those much more famous Classical houses at Olynthos. Space seems to have been assigned for particular purposes, according to the excavators. This period is characterised by a rich material culture of a variety of bone and stone tools (Hochstetter 1987) and hand-made pottery, very much in a Balkan rather than an Aegean tradition (Hochstetter 1984, 242–57). Though rectangular houses persist in Schichten 5 and 4 (Hänsel 1989, 290–315) there is a general diminution in the number of finds as we enter what in the rest of Greece would be called the 'Archaic' period (Hochstetter 1984, 261–71; 1989). As the material culture becomes less rich, so the architectural remains become sparser (Hänsel 1989, 304–24). One-room structures seem to replace the five-room central courtyard houses of the Iron Age proper in Kastanas VIII.

The exact date of the end of Kastanas VIII (Schicht 2) presents a problem. The site was still clearly inhabited at this time, but the chronology is uncertain. While there are radiocarbon dates for Schichten 8 and 6 (Willkomm 1989, table 3, 403) which date these levels firmly to the early Iron Age, there are none for later levels and no imports in the levels of Kastanas VIII (Schichten 4–2) which would provide some kind of cross date. The site seems then to have been abandoned in the years after 600 BC.

But not finally abandoned, for we have Kastanas IX (Schicht 1). Here there are some architectural remains (Hänsel 1989, 325–7) and some pottery (Hochstetter 1984, 271–3) – still hand-made. The architectural remains now comprise one very definite roof-tile (in the Aegean, specifically Laconian, tradition) and some small finds: a terracotta (Hochstetter 1987, 92–4 plate 24.4) of clearly Hellenistic type, and two coins (Franke 1987). The coins come from two of the most important cities of Hellenistic Macedon, Thessalonike and Amphipolis, and date to the very last period when Macedon was a political entity independent of Rome (187–68 BC), before the forces of the Kingdom of Macedon were decisively defeated at Pydna.

The Bronze to Iron Age tell of Assiros toumba in the Langadas basin (not far from Saratsé [modern Perivolaki]) has since 1975 been investigated by a British team led by Ken Wardle. The mound itself is not large (c. 110 × 70m – about 1ha) but nonetheless represents several centuries (and 14m) of occupation (Wardle 1980, 231–4). A total of nine phases were identified, the earliest (phase 9) dating to the late Bronze Age, the latest (phase 1) to the eighth century BC (Wardle 1980; 1987; 1988; 1989). The Bronze Age phases (9–5) are characterised by dense settlement in the form of rectilinear structures. This pattern continues in general throughout much of the Iron Age (phases 4–2, dating from 1050 BC onwards). The major difference appears to be that Iron Age structures are slightly larger, with larger rooms (if not larger domestic units).

As in Kastanas and Lefkandi, the ‘abandonment’ of the site is staggered. There seems to have been a destruction horizon at the end of phase 2, followed by a partial re-construction (phase 1.5; Wardle 1989, 449–53). The site seems then to have been abandoned for at least a century, during which a pithos burial was placed near the summit. The final, phase 1 occupation horizon differed markedly from the earlier early Iron Age phases. This comprised two large (12 × 6m) apsidal structures (Wardle 1987,

315–8; 1988, 376; 1989, 448–9) which shared a common wall, and appear to have been re-built in part. The change in architecture seems to indicate a change in function, which may (Andreou 2015) have had something to do with feasting – certainly it does not resemble the earlier patterns of domestic occupation. In any case, by 650 BC at the very latest (Mazarakis Ainian 1997, 43) the tell itself was finally abandoned. There is no evidence for later re-use or re-occupation.



*Figure 3.4. Photo of the toumba of Saratsé (modern Perivolaki)
(photo: author).*

The third of our Macedonian Iron Age tell sites, Toumba Thessalonikis, sticks out rather incongruously from one of the suburbs of modern Thessaloniki. The toumba itself has been investigated by a team from the university of that city since 1984/1991, initially under the direction of the late Professor Houmouziadis, but more recently by Stelios Andreou (Andreou and Kotsakis 1994; 1997). Like Vardaroftsa, the tell is associated with a surrounding ‘table’ or *trapeza* (Soueref 2009). Six occupation phases have been identified: phases 6 and 5 date to the earlier part of the late Bronze Age. Phase 4 gives us perhaps the best picture of a late Bronze Age (1300–1200 BC) Macedonian settlement (Andreou and Eukleidou 2011). The arrangements for storage of grain in pithoi (large ceramic storage vessels) are very similar to those from Assiros (Margomenou *et al.* 2007). Phase 3 (c. 1200–1100 BC) is associated with wheel-made Late Helladic IIIC pottery. Only phases 2 and 1 belong to the Iron Age proper.

Phase 2 (divided into 2B and 2A) clearly lasts some time, down into the tenth century BC (Andreou and Eukleidou 2011; Andreou and Kotsakis 1997). Though Iron Age, the overall plan of the settlement and both the size and shape of the houses (largely small, close-packed rooms, mainly rectilinear) do not differ much from traditions of habitation established in the Bronze Age.

The final phase (phase 1) however presents problems. Though pottery of ninth to fourth century date has been found, the principal architectural remains (in trenches 283, 114 and 113) comprise a large (80–90m²) four-roomed rectilinear structure constructed probably around 500 BC (Andreou and Eukleidou 2010, 256; Andreou and Kotsakis 1994, 211; 1997). This seems to have been overlain by a deposit comprising pottery of the ninth to fourth centuries BC, pyramidal loom-weights and animal bones. It is not clear what the function of this building, the only identifiable structure in the latest phase, was. It may have been a house; it may have been associated with feasting; or it may have had a range of functions (commensal and domestic). This raises the question of where the population of Toumba lived between 900 and 400 BC. The answer may be ‘in the table’, which appears to have occupation levels dating from the ninth to the fourth centuries (Soueref 2009). By the fourth century BC the houses in the ‘table’ closely resembled the kind of Greek-style courtyard houses we find at Olynthos. The structure just below the summit of Toumba however does not resemble any of these houses, nor much of the houses on the Toumba itself which came before it. It is, then, a rather unusual building, and suggests that the final phase of use of the site did not correspond to the final phase of occupation of the site *as a settlement* and so as a community.

Communities of some kind continued to flourish of course after 900 BC. The ‘tables’ (*trapezes*, elevated settlement platforms) of Nea Anchialos (Tiverios 2009b) and Karabournaki (Tiverios 2009a) and the table around Toumba Thessalonikis itself lasted into the fourth century BC. During the Archaic period these

settlements were importing large quantities of painted pottery from all parts of the Aegean. Only the foundation of Thessaloniki itself in early Hellenistic times brought them to an end.

Discussion and conclusions

What general inferences can we draw from this? First, there is no clear horizon for the abandonment of tells. To be sure, Lefkandi and Assiros (and probably Saratsé) were abandoned between 750–650 BC – but in the case of Lefkandi this was not the final abandonment. Some of the Macedonian tells (Vardaroftsa, Kastanas) lasted down into Hellenistic times – indeed as long as the independent kingdom of Macedon. And none of our tells was simply abandoned. What is striking however about all four of our principal examples (Lefkandi, Assiros, Toumba Thessalonikis and Kastanas) is that the abandonment of each of our tell settlements was staggered: there is a phase of final occupation of the site as a settlement, followed by a phase of abandonment of at least 100 years, followed by a brief phase of re-use. In all four cases the character of the final use of the site was markedly different from that of the straightforward settlement that had preceded it. All of these sites were abandoned as settlements before they were abandoned as sites and ‘lieux de memoire’. Once they were finally abandoned these settlements were not remembered. Their final phases of use, with the doubtful exception of Assiros, cannot be interpreted as a phase of ‘elite residence’. And if these tells maintained ‘ancestral associations’ because of their long period of occupation, and because the dead were buried within the accumulated human detritus of the tell itself (as was certainly the case at Lefkandi; Evely 2006; Sherratt 2006), then it is striking with how little regard they were felt by subsequent generations. Even their names appear to have been forgotten.

Why were tells then finally abandoned? A common sense answer might be that, as the tell rose in height, so the space at the

top shrunk, such that it could no longer provide a viable platform for human occupation. But this also begs a number of questions. For one thing, this depends on the size of the tell. There was still plenty of space (around 6ha) at the top of Lefkandi, Xeropolis at the time of its abandonment in the sixth century BC. For another, a tell which was thought to be ‘too small’ (as Assiros or Kastanas might have been) could be levelled. This is what happened to perhaps the most important Neolithic tell site in the Aegean – Knossos – at the end of the early Bronze Age. Here the Neolithic to early Bronze Age tell was levelled to create a platform for a much larger structure (the so-called palace) around 1900 BC (MacGillivray 1994, 46–8). This levelling of course implies a change of use – from settlement to something either more ritual or more political (or both). As we have seen, the final phases of the occupation of all four of our examples were different in character from what had gone before – they do not appear to have been settlements, as such. In two cases (Assiros and Toumba Thessalonikis) one could argue that the final phases perhaps involved the ritualised consumption of animals – commensality.

Here we come to the nub of the problem. In the southern Aegean, and especially in Attica, ritualised ‘feasting with the gods’ was a feature of Iron Age sites from around 950 BC onwards (Van den Eijnde 2010). Elsewhere in the Aegean houses similar to those that had been found on the summit of Assiros had been used for ‘ritual’ purposes, according to Alexander Mazarakis Ainian (1997). The much shorter-lived non-tell settlements at Emborio on Chios (Boardman 1967) and Zagora on Andros (Cambitoglou *et al.* 1971) were marked by small sanctuaries (temples) after their abandonment, remaining ‘lieux de memoire’ in the lives of the communities that had moved elsewhere. The summits of *toumbes*, one might have thought, would have made ideal places for ‘feasting with the gods’, other kinds of ritual associated with commensality or as some kind of repository for social memory. But they were never used for any of these purposes. And, for the

longest-lasting tells (Kastanas and Vardaroftsa) the latest uses seem to have been quite mundane.

If sanctuaries are associated with feasting, and if many of the activities on the tells from the late Bronze Age through to the Iron Age were too associated with some kind of communal commensality (Andreou 2012; 2015), then why did not these tells become sanctuaries or temples? This was the social and cultural logic that was working itself out in the southern Aegean, and its absence in Greek Macedonia is quite striking. Explaining this absence is as much an historical as an archaeological question, and if we could answer it, it might go a long way to explaining why it was that Macedon took a radically different path from the southern Aegean during the Archaic and Classical periods. Here the *polis* did not rise, and one might have thought that this would have provoked some wider, comparative debate. No such debate has arisen: discussion about the emergence of the kingdom of Macedon by ancient historians is still dominated by discussion of the Argead dynasty. In any kind of archaeological history one would also have thought that the abandonment of these tell sites would have provoked some kind of debate. But no: they are not mentioned by Coldstream (2003), since they lack that key feature of emerging Hellenism, Geometric pottery; they receive only passing mention in the latest archaeological-cum-historical survey of the region (Archibald 2009, 306); and the 'Companion to Ancient Macedonia' (Roisman and Worthington 2010) does not mention them at all. Archaeological history still has a long way to go to make its case to ancient historians still in thrall to the master narratives of their written sources.

But what of their significance for scholars of the Neolithic? Recent work (e.g. Tasić *et al.* 2015) has drawn attention to the sometimes fiery and violent end to human settlement at Neolithic tells such as Vinča-Belo Brdo, where we seem to have two phases of widespread fire destruction within a period of no more than 20 years. But if this Neolithic tell settlement went out with a bang,

our Iron Age examples seem to have gone with a whimper. They simply faded away, and gradually and imperceptibly faded out of social memory. We cannot as yet say *why* these sites were abandoned (instead of being modified, as Knossos was). But it is sobering to think that, once abandoned, they were completely forgotten, and that longevity of occupation is no guide to longevity of social and cultural memory in the minds of the descendants of the children, women and men who had lived in these settlements for generation upon generation, as many as the seasons of the leaves.

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Notes

1

I owe this reference to Kathy Baneva.

2

There have, from time to time, been suggestions that Xeropolis is not the only Iron Age settlement site in the area of Lefkandi, or not the only one associated with the various cemeteries that have been explored. But no-one has yet found this other settlement.

3

Though it is only very recently that the term ‘tell’ has been applied to the site, as in Lemos 2012.

4

The area around the mound (tell) of Paleoklissies at Amarynthos (Sackett *et al.* 1966, 64–6) has been investigated thoroughly by the Swiss archaeological school in recent years (Ackermann *et al.* 2013; Ducrey *et al.* 2007; Knoepfler *et al.* 2014). While the extent of the Bronze Age occupation has been established, the exact location of the sanctuary of Artemis has not. It is not clear if the small quantity of Geometric and seventh century finds relate to the final occupation of the mound itself or to the sanctuary nearby.

5

Mervyn Popham (Popham *et al.* 1980, 423–7) suggested it might be ‘Lelanton’, after the ‘τὸ Λήλαντον καλούμενον πεδῖον’ [the plain called Lelanton] mentioned in Strabo (10.1.9). But this is an inference, and a settlement called Lelanton is not mentioned in any ancient source.

6

For the sequence see Hochstetter 1987, 96–101. The earliest level (Willkomm 1989, 402) seems to be Schicht 24, but apparently Schichten 24–20 (Kastanas I and II) were only investigated through sondages. These levels appear to date to the middle Bronze Age.

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Encounters in the watery realm: early to mid-Holocene geochronologies of Lower Danube human–river interactions

Steve Mills, Mark Macklin and Pavel Mirea

Introduction

Our understanding of prehistoric human–river interactions in the Lower Danube and the environmental context surrounding the emergence of the Neolithic in the region at around 6100 cal BC is being transformed by recent geoarchaeological investigations. In this paper we review recent research on the interplay between river dynamics and the archaeological record in the Lower Danube region with particular focus on: 1) the need for further Holocene hydromorphic and palaeoenvironmental research along the Lower Danube valley between the Danube Gorges and the Danube delta

and 2) the likely impact of Rapid Climate Change (RCC) events on communities using floodplain environments and the preservation of the archaeological record within riverine contexts. As examples, we discuss the late Pleistocene and Holocene fluvial chronology from the Teleorman Valley, southern Romania, and new research in an alluvial basin of the Danube between Turnu Măgurele and Zimnicea in Romania. Combined, these demonstrate the important contribution that establishing geochronologies has for understanding prehistoric human–river interactions.

The close relationships that people had, and continue to have, with river systems is a long established field of study that considers flood regimes, sedimentation rates and patterns, channel form and mobility, and the use and abandonment of flood plains and river terraces for agriculture and settlement (e.g. Arnaud-Fassetta *et al.* 2010; Brown 1997; Chen *et al.* 2012; Giosan *et al.* 2012; Macklin and Lewin 2015; Macklin and Needham 1992). Alongside this, a better understanding of how river channel and floodplain dynamics, in terms of river erosion and sedimentation, impact the preservation of archaeological sites within river valleys has emerged over the last 20 years or so (e.g. Howard and Macklin 1999; Lewin and Macklin 2003). Furthermore, improved dating techniques and date sampling and analysis strategies are helping establish geochronologies that advance understanding of Holocene climate change and its impact on the fluvial record (e.g. Benito *et al.* 2014; Macklin *et al.* 2002; 2006; 2012). These studies in turn are drawn upon to enhance interpretation of the decision-making of past communities in relation to changes in climate and river regimes during the Holocene (e.g. Bonsall *et al.* 2015; Macklin *et al.* 2011; Weninger *et al.* 2009).

Characteristics of rivers and floodplains, including the frequency, size, routing and duration of flooding events; the ways floodwaters spread and recede (e.g. the potential for ponding in palaeochannels, to be stored on floodplains or redirected); and rates of sedimentation, channel incision, channel change and bank

erosion, all contribute in diverse and dynamic ways to make these environments replete with opportunities, attractions and potential hazards to human exploitation. Research that aims to better understand these kinds of Holocene river environment characteristics and their impact on prehistoric communities within the Lower Danube region needs to be more fully adopted. The Lower Danube covers a distance of 1,075km and is here taken to be the reach of the Danube between Baziaş (west end of the Danube Gorges) and Sulina (east edge of the Danube delta) and forms the border of Romania with Serbia (235.5km), Bulgaria (469.5km), Moldova (0.6km) and Ukraine (53.9km) (Fig. 4.1).



Figure 4.1. Map showing main geographic features, rivers and sites mentioned in the text.

The Danube is of regional importance as a route for communications, the movement of people, and a resource base from the late Pleistocene through to the present and it is therefore critical that research is extended to investigate its prehistoric significance in all zones along its course. Until recently, however, our understanding of human–river interactions during the early to

mid-Holocene in the Lower Danube region has been geographically limited to the very west and very east of this reach. At the western end, within the Danube Gorges (or Iron Gates) there has been much research on the relationships people had with the Danube and its immediate environment from the late Glacial period onwards (c. 12,000–5800 cal BC, Epipalaeolithic/Mesolithic and Neolithic). These studies are well known and have identified and interpreted the economic and symbolic aspects of prehistoric life within the Gorges based on the evidence for habitation, burial, use of material culture and subsistence (e.g. Bonsall 2008; Bonsall *et al.* 2008; Borić 2002; 2003; 2005; 2007; Borić *et al.* 2014; A. Boroneanţ 2012; Chapman 1992; Cook *et al.* 2002; Radovanović 1996; Srejović 1972). Continued strategies of radiometric dating are refining the chronological sequence that underpins our understanding of the transformation in lifestyles from Mesolithic to Neolithic within the Gorges. The potential impact of flooding and Rapid Climate Change (RCC) events on prehistoric communities and the preservation of the archaeological record within the Gorges are also considered (Bonsall *et al.* 2002; 2015; Borić 1999; Borić and Miracle 2004). Debate and research continue on the causes of gaps in the sequences of radiocarbon dates indicating a reduction in prehistoric activities within the Gorges at 7500–7000, 6600–6000 and after 5800 cal BC. These have been linked with cooler and wetter climatic conditions, including those associated with the 8.2 ka cal BP (6200 cal BC) RCC event (see below). The implication is that people transferred their activities to higher ground during these periods of increased flooding and/or that associated river erosion and sedimentation may have reduced archaeological preservation and visibility.

At the eastern end of the Lower Danube, research and debate concern the dating and speed of the marine transgression of the Black Sea at around 7400–6400 cal BC and its impact on the decision-making of prehistoric communities (e.g. Bailey 2007; Giosan *et al.* 2009; Peev 2009; Ryan *et al.* 2003; Yanko-Hombach

et al. 2007). Debate has oscillated between arguments for a rapid, catastrophic rise in level with dramatic consequences for prehistoric communities (e.g. Ryan *et al.* 2003) and those that promote a more gradual rise in level with a longer period of environmental stabilisation and slower shifts in human lifestyle (see Yanko-Hombach *et al.* 2007). Importantly, it is recognised that research strategies must focus on improving understanding of pre-7400–6400 cal BC (i.e. pre-Neolithic) human behaviour along the now submerged western Black Sea coastal plain and inland along the Danube corridor. This can only be achieved through continued collaboration between marine and dryland geologists on the one hand and archaeologists on the other, with greater emphasis placed on the human consequences of sea level change.

Alongside studies of the Black Sea level, there is continuing research into palaeoenvironmental changes and the settlement and use of the Danube delta area from the early Holocene onwards (e.g. Carozza *et al.* 2012; Giosan *et al.* 2006; Voinea and Caraivan 2011). There is evidence for the settlement of the delta area from the local late Neolithic and into the Chalcolithic onwards (from c. 5000 cal BC, i.e. Hamangia, Boian and Gumelnița in pottery sequences), but there is currently an absence of evidence for the settlement and use of the delta during the early Neolithic and before. This gap in earlier evidence is potentially related to the position change of the Black Sea coast, with the possibility that prehistoric communities were inhabiting the now submerged former coastal plain further east. It is also likely that the delta area was a highly dynamic environment during this earlier period related to changing levels in the Black Sea, with a more stable environment suitable for the kind of settlement (in particular tell settlements) that survives and is visible in the archaeological record only in place from around 5000 cal BC onwards.

In terms of early to mid-Holocene human–river interactions, the reach of the Danube in between these two areas is much less understood, creating a significant gap in our knowledge. Alongside

this, the apparent absence of evidence for the Mesolithic in the Lower Danube area has long been recognised but, nevertheless, remains under-studied. With the exception of the Danube Gorges and the well-known and studied flint tool and working scatters at Pobiti Kamuni, west of Varna (Bulgaria), which indicate intermittent use of the area from before the Last Glacial Maximum through to the seventh millennium cal BC (Gatsov 1995), this lack of Mesolithic evidence along the Lower Danube could be interpreted as reflecting an absence of prehistoric communities in this area prior to the Neolithic (i.e. prior to c. 6100 cal BC). Given the substantial evidence for a Mesolithic presence in the Danube Gorges and at Pobiti Kamuni, it seems to us unlikely that the same, or other, prehistoric communities were not also exploiting river environments elsewhere along the Lower Danube at this time. We agree with Bailey (2007, 521) that archaeologists should be looking at deeply alluviated locations along major rivers for more evidence of human activities during the pre-Neolithic and early Neolithic period (c. 8000–6000 cal BC). There is a need for further research to position the archaeological record of the Danube Gorges in a broader context and address claims of the apparent isolation of communities in the early Holocene.

We therefore consider it essential to study the spatial and temporal changes in hydromorphic regimes along the Lower Danube and how they impacted prehistoric communities by posing opportunities and stresses. The term ‘hydromorphic regimes’ (after Macklin and Lewin 2015, 229) means variability in river regimes that are climate, hydrology and geomorphology driven. This variability needs to be verified and precisely dated within the Lower Danube if we are to be more informed about the ways that prehistoric communities interacted with dynamic river valley environments.

Rapid climate change events

Recent research indicates that the 8.2 ka cal BP RCC event (henceforth 8.2 ka event) had a major impact on climate, river hydrology and likely on the riverine subsistence base for prehistoric communities, including in the Lower Danube region (Alley and Ágústssdóttir 2005; Alley *et al.* 1997; Anderson *et al.* 2007; Berger and Guilaine 2009; Bonsall 2008, 264–6; Bonsall *et al.* 2002; 2015; Morrill *et al.* 2013; Rohling and Pälike 2005; Wanner *et al.* 2011; Weninger *et al.* 2006; 2009). The event was abrupt but of relatively short duration, with the main cooling and drying period only lasting around a decade, followed by a few decades to a century or two of warming and return to pre-event state. In Europe it is marked with a summertime cooling of around 1°C, shifts in vegetation, and changes in hydrology with an increase in lake water level in central Europe (Magny *et al.* 2013), but drier conditions in the north and south.

Climate proxy records indicate a rapid cooling event between 6200 and 6100 cal BC, probably resulting from a catastrophic melt-water flood (dated to around 6300 cal BC) from the Laurentide ice sheet in Hudson Bay (former glacial lake Agassiz) into the north Atlantic (Burroughs 2005, 60–2; Clarke *et al.* 2004). The cooling coincides with Bond event 5 (ice-rafting events, see Bond *et al.* 1997; 2001) and a likely slowdown in the north Atlantic thermohaline circulation (Renssen *et al.* 2002). This event is set within a longer cooling period between 6600 and 6000 cal BC (Mayewski *et al.* 2004) coincident with an intensified semi-permanent high-pressure zone over Siberia producing cold and windy periods in high latitudes. This longer cooling period is part of a repeating, but not regular, pattern of Holocene global cooling events likely related to fluctuations in solar insolation and a slowdown of thermohaline circulation (Bond *et al.* 2001), the most recent being the Little Ice Age (broadly between AD 1450 and 1850).

One mechanism for cooling is the movement of large amounts of cold air in north-easterly winds (the Vardar) with a significant

accompanying wind chill. Siberia is the likely source of this cold air, a consequence of intensification of the Siberian semi-permanent high-pressure zone (Mayewski *et al.* 1997). The pollen record from Steregoiu, north-west Romania, indicates a rapid temperature drop (around 2–4°C in average winter temperature) associated with this movement of cold air during the 8.2 ka event (Feurdean *et al.* 2008). There is variation in the records for change in mean annual precipitation during this period with regional variation across Europe, where some observations indicate increases and others decreases for both winter and summer (e.g. Dormoy *et al.* 2009; Morrill *et al.* 2013; Pross *et al.* 2009). The growing speleothem climate proxy data sets from the Balkans in general support these Holocene temperature and hydrology changes (e.g. Drăgușin *et al.* 2014).

These events therefore had significant ecological consequences influencing temperature, wind chill, precipitation, vegetation distribution and growth, as well as variations in river hydrology, all of which would have impacted human communities. Weninger and colleagues (2009; see also Berger and Guilaine 2009; Weninger *et al.* 2006) suggest that the longer 6600–6000 cal BC cooling period may have been a trigger for, or at least influenced, the spread of early farming from Anatolia to south-east Europe. They also advocate that climatic deteriorations during RCC events, as well as other environmental factors, should be considered alongside the cultural, economic and religious dimensions underlying prehistoric social change. To provide more informed interpretations, it is imperative that the sensitivity of prehistoric communities to variability in climate and river hydrology is better studied and integrated. It is also essential that research aims to achieve more than demonstrate contemporaneity between past environmental and cultural changes but endeavours, where possible and appropriate, to identify and evidence causal links between climate events and the archaeological record (Berger and Guilaine 2009, 32; Bonsall *et al.* 2015, 3).

While it is certain they impacted the region, there is currently very little evidence for these Holocene RCC events within the Lower Danube (see Bonsall 2008; Bonsall *et al.* 2002; 2015). Given the regional nature of the RCC events, it is essential to acquire localised palaeoclimate data, because records from one region may not necessarily be valid in other regions. There has been some research that considers a possible association between site abandonment and the 4000–3200 cal BC RCC event (Weninger *et al.* 2009, 43–4). In the Danube Gorges, in terms of river histories and the records and impacts of extreme flooding (including that indicated at 6200 cal BC), there are no geomorphological or chronological constraints of late Glacial–Holocene river development and the impact that this could have had on Mesolithic and Neolithic communities. Indeed, the suggested period of flooding at c. 6200 cal BC is presently based on a single IRSL date (Bonsall *et al.* 2002), as well as the gap in radiocarbon dates mentioned above.

It is possible that after 6200 cal BC Mesolithic lifeways in the region were disrupted; the combination of changes in environmental conditions and the presence of Neolithic communities nearby may have provided a trigger for social and cultural change (Bonsall 2008; Bonsall *et al.* 2002; Thissen 2009). An alternative, and now attractive, way of life was available with the Neolithic after 6200 cal BC. Research in the Teleorman river valley (see below) and elsewhere in Europe (Macklin *et al.* 2006) indicates a period of relative river quiescence with reduced flooding after 6200 cal BC that coincides with the appearance and development of the Neolithic in the region. The possibility that extended periods of less frequent flooding created a favourable environmental ‘window’ for the first Neolithic herders and settlers to use the natural resources that river valleys in the region offered requires further investigation (Macklin *et al.* 2011). Recent research (Benito *et al.* 2015) of large datasets (>2000) of radiometrically dated Holocene flood units has identified multi-

centennial phases of flooding in temperate Europe at 6900–6400, 5700–5300 and 3800–3700 cal BC. The earlier two phases coincide with ^{14}C sequence discontinuities from the Danube Gorges at 6600–6000 and after 5800 cal BC. It would be informative to see if settlement and farming in the lower Danube were in any way punctuated by these flooding episodes.

Rethinking Lower Danube prehistoric human–river interactions

Since 1998 geoarchaeological research in the Teleorman river valley (henceforth TV), a major north-bank Danube tributary in southern Romania, has improved understanding of the relationships between late Pleistocene–Holocene river and floodplain hydrology and the prehistoric archaeological record (Bailey *et al.* 2002; 2003; Howard *et al.* 2004; Macklin *et al.* 2011; [Fig. 4.2](#)). Multi-period archaeological survey and excavations have been carried out within a c. 12km² area of valley floor, centred on the confluence of the Clanița and Teleorman rivers. In parallel, geomorphological and geochronological investigations were conducted on late Pleistocene and Holocene river terraces on which archaeological sites and finds are preserved. The purpose of this multi-disciplinary approach has been to evaluate the extent to which settlement and find recovery patterns reflect cultural actions or are the result of natural river processes (erosion and sedimentation). Real or apparent continuity in the archaeological record and the impact of rapid environmental change on prehistoric riverine communities were also addressed.

Three late Pleistocene river terraces and four Holocene river terraces have been dated and mapped within the study area (Howard *et al.* 2004; Macklin *et al.* 2011). The late Pleistocene terraces are the most extensive and the later Holocene terraces are inset into these and located towards the centre of the valley floor. Entrenchment of the contemporary river channel occurred

between AD 1150 and 1550. To date no material culture earlier than the Neolithic (i.e. before 6100 cal BC) has been found on these late Pleistocene terraces. Research indicates that between approximately 6200 and 4000 cal BC river channel and floodplain dynamics were reduced, with less frequent flooding relative to periods before and after. During this period the Teleorman river was located within the central part of the valley floor and the late Pleistocene terraces above it were not significantly affected by flooding events. All archaeology dating to this period so far identified within the study area is located on the late Pleistocene terraces. The earliest Neolithic material culture (c. 6100–5300 cal BC, Starčevo-Criș and Dudești in pottery sequences) is located on the oldest late Pleistocene terrace (Andreescu and Mirea 2008; Mirea 2005; Thissen 2015). Material culture dating to the first half of the fifth millennium cal BC (Boian in pottery sequences) is located on slightly raised former islands and bars on these terraces. These locations were less vulnerable to major river floods and groundwater surface floods during their occupation. It is noteworthy that although river morphology changed very little over this period, there is evidence of major flooding between 5700–5300 cal BC in temperate Europe (Benito *et al.* 2015) and this may have prompted the preference for developed Neolithic sites to be on more elevated areas on the Teleorman floodplain. There was a significant increase in river activity from around 3900 cal BC onwards, around the time that tell settlements (Gumelnița in pottery sequences) were abandoned, which also coincides with major flooding episodes in northern and central Europe at 3800–3700 cal BC (Benito *et al.* 2015). This research in the TV has identified important themes that archaeologists must address when studying prehistoric human–river interactions in the Lower Danube area (and elsewhere).

Preservation of the archaeological record

Investigating and interpreting Palaeolithic, Epipalaeolithic/Mesolithic and Neolithic archaeology is dependent on a good understanding of how local river dynamics and hydrological variability may have influenced the visibility of the archaeological record. In the TV study area, for example, it is now known that due to river action material culture older than 37,000 years will not be found in primary contexts below 10m above modern river level. In addition, shortly before 14,000 cal BC a change in river morphology from braided to large-scale meandering accompanied by 1m of incision (with subsequent incision during the Younger Dryas) means that the extensive late Pleistocene terraces would have been above the level of regular flooding after this time. If Epipalaeolithic/Mesolithic people used the river valley after c. 13,000 cal BC, then associated material culture/sites could be expected to be found *in situ* on the surface of these older terraces. Furthermore, knowing the geochronology of river terraces, as well as the morphology and location of river channels, has informed archaeologists where preservation of Neolithic *in situ* material culture/sites is possible. In the TV study area, this can only be on the late Pleistocene terraces and areas outside of the location of the main river channel during the Neolithic period (within a 500m wide zone in the central part of the valley floor). All other terraces post-date the Neolithic period and will therefore not preserve *in situ* Neolithic material culture.

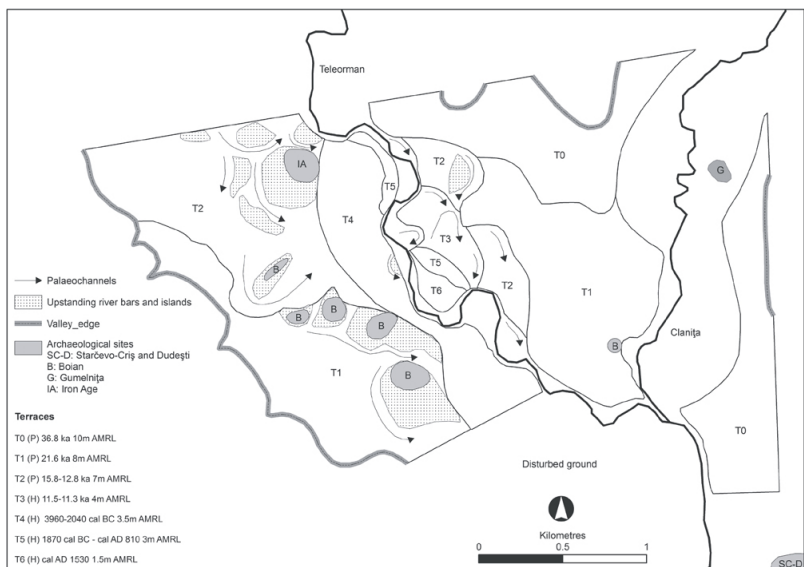


Figure 4.2. *Geomorphological map of the Teleorman valley (SRAP) study area showing river terraces (P = Pleistocene, H = Holocene, AMRL = above modern river level), palaeochannels, and location of archaeological sites.*

Influence of river dynamics on the decision-making of prehistoric communities

Archaeologists must aim to identify the environmental opportunities that influenced the decision-making of prehistoric communities, as well as the environmental constraints, and a better understanding of changes in fluvial dynamics can contribute to this. In the TV study area, for example, no fluvial deposits date to the Neolithic (c. 6200–4000 cal BC), indicating a period of relative river quiescence and reduced frequency of major floods. As already mentioned, further study must investigate if there is any relationship between the timing of this period and the first Neolithic herders and settlers using the resources offered in river valleys in the Lower Danube area. Was this extended phase of more slowly changing and perhaps more predictable river

environments perceived as a favourable environmental ‘window’ that may have, in part, triggered cultural change? Currently a causal link between environmental and cultural change around 6100 cal BC in the Lower Danube area cannot be demonstrated.

Research in the TV study area has also established that settlement tells (from c. 4500 cal BC) formed during this period of river stability and that their development, at least locally, cannot therefore be associated with a change in river dynamics. The abandonment of tells, however, does coincide with an increase in river instability at c. 3900 cal BC in the TV and major floods elsewhere in northern Europe at 3800–3700 cal BC, and this potential association also requires further study.

Currently no evidence of enhanced river activity corresponding with the 8.2 ka event has been detected in the TV. There is also currently no evidence of Epipalaeolithic/Mesolithic use of the valley, at least not in the study area discussed here. To explore early to mid-Holocene human–river interactions, a study area with evidence for Palaeolithic, Mesolithic and early Neolithic activity is required, one that also has the potential to study geomorphology, establish geochronology and identify signatures for environmental change, including RCC events.

Encounters in the watery realm – new research in an alluvial basin of the Lower Danube

Informed by the research in both the Danube Gorges and TV, we have identified an alluvial basin along the Lower Danube valley between Turnu Măgurele and Zimnicea in Romania that meets these criteria and merits further investigation ([Fig. 4.3](#)). This is one of the largest alluvial basins in the Lower Danube with an area of approximately 48,732ha and is 40km from west to east and a maximum of 20.5km from south to north. The Danube floodplain in the basin is bordered to the north by the loess terraces of the

Romanian Plain (from 35m a.s.l.) and to the south by the foothills of the Stara Planina in Bulgaria (from 55m a.s.l.). Initial research is focused around the villages of Poiana (formerly Flămânda) and Ciuperceni on the Romanian side of the alluvial basin within the boundaries of Teleorman County.

On the Romanian side the Călmățui River drains into Lake Suhaia, with a channel leaving the lake at its southern end and joining the Danube. Lake Suhaia is now less than half of its former size following draining in the early 1970s to reclaim land for agricultural use (reduced from 3104ha to 1050ha). The lake formerly had islands with archaeology dating to the late Neolithic and Iron Age and burial mounds from late prehistory and antiquity. Former Lake Bercelui, south of Turnu Măgurele, is now completely drained to reclaim land for agricultural use. There are many small lakes and areas of wetland within the alluvial basin, as well as large irrigated areas to permit agricultural use and also extensive grazing areas for cattle, sheep and goat.

Within the study area there is a sharp geomorphological and fluvial sedimentation style transition, going from a relatively confined valley floor reach (3km wide) with extensive late Pleistocene and early Holocene river terraces at its western end (around Poiana), with well-developed braided and meandering palaeochannels, to an anabranching river with large islands, levees and adjoining flood basins that contain lakes. On some of these late Pleistocene terraces linear dune features are present, forming upstanding areas in the alluvial wetlands that appear to have been preferentially selected for activities by human communities from the Mesolithic through to the present. The eastern end of the study area (at Zimnicea) is marked by a similar upstream constriction (2km wide) where the river resumes a more entrenched and confined course. The extended study area contains the full range of river environments and land forms found in the Lower Danube and is therefore representative of the potential variability in prehistoric human–riverine interactions for the Lower Danube as a

whole.

There is evidence for human activities from the Palaeolithic through to the modern day. Archaeological fieldwork since the 1970s has identified and studied middle to late Palaeolithic activity at Ciuperceni on the loess-covered uplands on the northern side of the study area (e.g. V. Boroneanţ 1978; V. Boroneanţ and Vlad 1992; Dobrescu *et al.* 2011; 2015; Păunescu 2000, 236–42, 244). From 2010 onwards the Teleorman County Museum, on behalf of the Teleorman County Council, has been conducting archaeological surveys within, and for the benefit of, the communes of Teleorman County. These contribute to the General Urban Plans for the communes. As part of this process, the archaeological survey around Poiana and Ciuperceni has identified at least 25 sites from different periods, mainly from prehistory (Mirea *et al.* 2011). There is significant evidence for Mesolithic activities in the study area (Mirea and Torcică 2011, c. 500–600 pieces of worked flint). There are at least four separate flint scatters located on upstanding late Pleistocene/early Holocene islands which have not been affected by later Holocene and historical flooding and sedimentation. To the best of our knowledge these are the only Mesolithic activity areas that have been discovered in the Lower Danube valley east of the Danube Gorges. Early and middle Neolithic pottery (Starčevo-Criş and Dudeşti) is also present on at least five of the upstanding islands (Mirea and Torcică 2011).

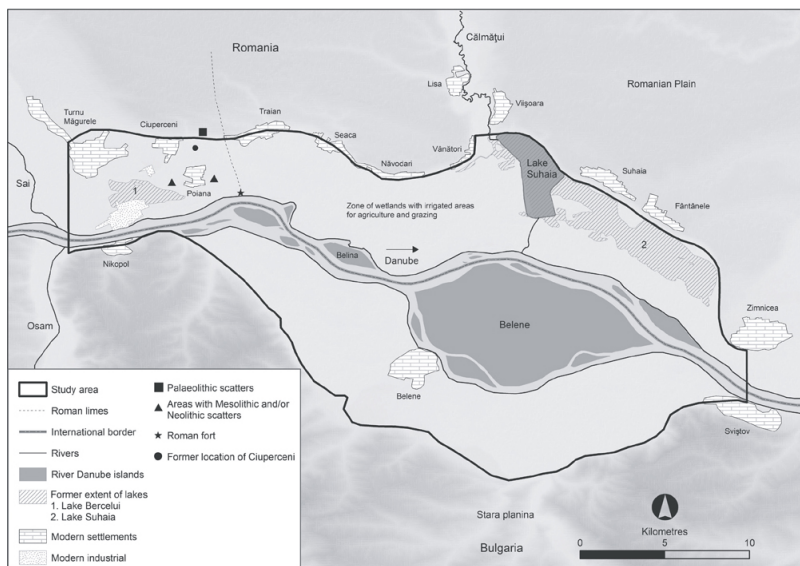


Figure 4.3. Map of the Turnu Măgurele–Zimnicea study area showing main features and sites mentioned in the text.

Later archaeology includes a Roman limes and fort at Flămânda, forming a boundary of the Roman Empire against the Geto-Dacians using local topography and changes in the geomorphological character of the wetland (Cătănicu 1997). This was likely built at the easternmost point within the alluvial basin where it was less likely to be destroyed by flooding events and therefore easier to maintain. A medieval rural settlement (second half of the fourteenth century AD) overlaps the Roman fortress (Țânțăreanu 2005). There was also a medieval fortress at Turnu Măgurele, originally built by Romanians and conquered by the Turks.

This archaeological record is testimony to the long and repeated use of this alluvial basin by human communities as a focal point and resource base. As well as providing an economic benefit, upstanding islands may have had a symbolic significance for past human communities inhabiting the wetland environment. There does not appear to be any other research in the Lower

Danube valley focused on the early to mid-Holocene archaeological and environmental record. Most other work focuses on later Eneolithic (c. 4500–3900 cal BC) settlement tells further east along the Danube, including Pietrele, Căscioarele, Gumelnița, Sultana, Bordușani and Hârșova.

Preliminary work by the authors has identified the potential for an extended palaeobotanical sequence in a major palaeochannel (around Poiana) next to scatters of Mesolithic and early Neolithic material culture. It appears to have been abandoned in the late Pleistocene but continued to receive flood waters during the largest floods in the Holocene. This palaeochannel has the potential to provide a high-resolution hydrological and vegetation record. The age of late Pleistocene river terraces can be further constrained by OSL dating of linear dunes that developed after channel systems ceased to flow. Field survey aims to locate, map and assess the character of distributions of Mesolithic and early Neolithic material culture and, importantly, to determine, in tandem with geomorphological study, if any are in primary archaeological contexts. Ethnographic and historiographic surveys will also document the use of the alluvial basin and its wetlands as a diverse resource base and communication and navigation network during the recent past.

The palaeochannels, islands and terraces also provide the opportunity to obtain evidence for the environmental impact of major flooding events, including, potentially, the 8.2 ka event. Having occurred in the recent past, the hazard posed by major flooding events within the alluvial basin is well understood by the local communities. In 1942, an ice jam in the Danube resulted in a major flood that destroyed the village of Ciuperceni. After this event it was necessary to move the village in its entirety from its former location within a palaeochannel to higher ground. Prior to major drainage and irrigation works from the 1970s onwards, it was necessary for the village of Poiana to be partially surrounded by an embankment for the purpose of flood prevention/

alleviation. The village had also been a mooring place for craft navigating the waterways in the basin.

The alluvial basin therefore has the potential to provide geomorphological and geochronological constraints for early to mid-Holocene fluvial dynamics in this part of the Lower Danube, including identifying any impact of RCC events. By relating this to the archaeological record, there is an opportunity to gather primary data that may enable a better understanding of how Holocene river dynamics and climate change influenced environmental conditions and resource opportunities within an alluvial basin of the Lower Danube and impacted on the lifeways and decision making of prehistoric human communities. Furthermore, by building on and enhancing the community engagement activities of the Teleorman County Museum (e.g. Mills 2011; Mirea 2015), it is hoped this research will provide opportunities and resources for local people to learn more about the dynamic character of human–river interactions through time, as well as heritage and environmental preservation and sustainability.

Conclusion

From the late Pleistocene onward the Danube has been important as a route for communications, the movement of people and as a resource base, and research on its prehistoric significance must include all zones along its course. It is essential to investigate spatial and temporal changes in hydromorphic regimes along the Lower Danube between the Danube Gorges and delta and how they impacted prehistoric communities by posing opportunities and stresses. This variability needs to be verified and precisely dated if we are to be more informed about the ways that prehistoric communities interacted with dynamic river valley environments in the region. Compared to other regions of Europe, the Lower Danube is under-represented in dated Holocene flood

units. Presently the Teleorman river is the only radiometrically dated river sequence in the region and research here has identified phases of reduced and increased river dynamics that improve our understanding of the local environmental context during the Neolithic. Similar research elsewhere in the Lower Danube is required to establish the environmental and hydrological conditions coincident with transformations in prehistoric lifeways from c. 6100 cal BC onwards and to investigate any relationships between RCC events and cultural change. In addition, there is a need to position the early to mid-Holocene archaeological record of the Danube Gorges in a broader context, and geoarchaeological and geochronological studies of alluvial deposits dating to this period further east along the Lower Danube valley will help with this. The alluvial basin between Turnu Măgurele and Zimnicea, with evidence for Palaeolithic, Mesolithic and early Neolithic activities and a representative range of river environments and land forms, provides the opportunity for research of this kind. This will improve and transform late Pleistocene/Holocene river chronologies in the Lower Danube and contribute to the increasingly precise knowledge of European and global patterns of (rapid) climate change, flooding events, erosion and alluviation.

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Buried in mud, buried in clay:
specially arranged settlement burials
from in and around the Danubian
Sárköz, Neolithic southern Hungary

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It is no exaggeration to say that 20 years' working and brainstorming with Alasdair Whittle has had an impact on ways of posing questions and seeking answers in researching early sedentary lifeways in the Carpathian basin. One key area of our common research is the Sárköz in the south Hungarian Danube floodplain and its adjacent hills in Transdanubia. In the Neolithic and early Chalcolithic periods (sixth to fifth millennium cal BC) several major currents can be detected, from the time of the first farmers of Balkan origin, through the LBK to the Lengyel culture

representing the late Neolithic of the western Carpathian basin. Our research is fundamentally based on the archaeological record, supplemented by geoarchaeological, zooarchaeological, osteological, aDNA and isotope analyses, a palaeopathological investigation, and absolute dating modelled with Bayesian statistics. Out of the Sárköz Neolithic, traces of some peculiar burial customs will be presented in this paper.

Becoming involved in the ERC project *The Times of Their Lives*, led by Alasdair Whittle and Alex Bayliss, over the many years of common work the title may be slightly paraphrased as ‘The times of *our* lives’. At first sight, this switch might seem a little pretentious. However, for anyone familiar with Alasdair’s contribution to Neolithic studies in the Carpathian basin (among other regions) and with the work of our Neolithic research team during the past two decades, there can be no doubt that ‘the times of Neolithic communities’ is, concurrently, also the time of our professional lives as archaeologists and simultaneously the time of our generation, too. Clearly, our interest in roughly the same sorts of problems steered our approach and our thoughts on these issues in a more or less similar direction.

Introduction

The Sárköz, a floodplain along the southern course of the Hungarian Danube, and in more general terms the southern and western parts of Transdanubia, form one of the key regions that witnessed the transformation to sedentary and farming life at the onset of the sixth millennium cal BC. This landscape reflects a great many local and, apparently, irreversible changes with an impact on a vast area of central Europe. The main questions for the beginnings of sedentary life in the Sárköz are connected with the fact that this was the last setting along the Balkan–Danubian route to host migrant groups who had come directly from south-east Europe (Bánffy 2013; Bánffy *et al.* 2014). This landscape,

which seems marginal when inspected from both south-eastern and central European perspectives, reflects multiple episodes of cultural and also genetic influx from the northern Balkans over the sixth and early fifth millennium cal BC. Most of these changes had a major impact on the Neolithic transition over a vast area of central Europe.

In this paper we report on some unusual burials from two of the Sárköz Neolithic settlements and one from the adjacent hills, dating from the sixth to fifth millennium cal BC (Bánffy 2013; Bánffy *et al.* 2014; Jakucs and Voicsek 2015; Marton and Oross 2012; Oross *et al.* 2016a), as this area was, at least in part, involved in our large joint project.

The first of our sites is that of Alsónyék-Bátaszék, situated in the south-western part of the Tolna Sárköz region in Transdanubia (Fig. 5.1). The site lies at the western edge of the Sárköz region, at a boundary zone between the Danube alluvial plain and the cooler and more humid, forested Transdanubian hilly region. The long history of the site covers almost the entire sixth and the first part of the fifth millennium cal BC, with four main occupation periods (Starčevo, LBK, Sopot, Lengyel). During a rescue excavation covering 25ha, carried out between 2006 and 2009, settlements and burials were unearthed (Osztás *et al.* 2012). Our first case study with unusual burials comes from the Starčevo period of Alsónyék.

After the end of intensive Starčevo occupation at Alsónyék, at the end of the fifty-sixth century cal BC, currently available data suggest a short period when the site must have been left uninhabited. A few hundred years later, in the central part of the investigated area, a Linearbandkeramik culture (LBK) settlement with longpits flanking about fifty longhouses was established, dating from the fifty-fourth to forty-ninth century cal BC. The importance of this settlement lies, amongst others, in its pottery assemblage, which shows close links with the early Vinča style of the northern Balkans, and thus fits into a group of sites with

similar assemblages both in this region and further south, which are currently under investigation (Jakucs and Voicsek 2015; Marton and Gross 2012).

An extended site was recently investigated at Tolna-Mözs, where 47 typical LBK longhouses were uncovered in three clusters (with many more identified through geophysical prospection). The pottery assemblage linked to the southern cluster of houses contained several sherds recalling late Starčevo wares, as well as a significant proportion of early Vinča-type finds, while early LBK types are also significant. The finds from the middle house cluster consisted of early LBK and Vinča-type fragments, while the northern house cluster yielded Vinča-like and late LBK material. A series of settlements with a similarly peculiar combination of pottery forms and decorations have since been identified nearby. This phenomenon challenged our notions of the entire chronological sequence: the cultural differences within the LBK 'culture' are often more striking than those between two separate 'cultures'. The crucial question in this case is how we should define the role of the earliest Vinča culture in the emergence of the LBK, and wherein the 'LBK-ness' of this conglomerate lies. Our next small case study goes to a site that shows all the above questions in an even sharper light.

Not far from the Tolna Sárköz and from Alsónyék, another site dating broadly to the same period as Tolna-Mözs, Szederkény-Kukorica-dűlő, will be our next case study. Szederkény is located in the southern Baranya hills of south-east Transdanubia (Fig. 5.1). The excavation of the site was conducted along the planned M6 motorway. It was carried out by the archaeologists of the Janus Pannonius Museum in Pécs between 2005 and 2007 and totalled over 12ha. The Neolithic settlement features formed three distinct clusters across the eastern, middle and western part of the excavated surface and included typical early Vinča material with some elements of LBK (Jakucs and Voicsek 2015).

As a third case study, we include the Kalocsa Sárköz area on

the eastern bank of the Danube, reporting on some of our first results from Fajsz-Garadomb (Fig. 5.1). This site contained a thick sequence of layers with mainly Sopot culture occupation, including a considerable amount of finds with traces of influence from the contemporary early Tisza culture (Bánffy *et al.* 2014).

The Neolithic of the area terminates with the exceptionally dense late Neolithic Lengyel occupation discovered and excavated at Alsónyék, with remains of 122 surface-level, robust timber-framed houses excavated. Many more such buildings could be observed geophysically (Osztás *et al.* 2012; Rassmann *et al.* 2015a; Serlegi *et al.* 2013). Along with the houses, several burial groups with 2300 graves overall were found. About the total number of the Alsónyék Lengyel burials there are no estimates, but it was possible to make some extrapolations by combining the excavated surface and the geophysical data. Almost 9000 Lengyel features were excavated over 25ha, while the entire settlement probably covered 80ha. The immense number and importance of these burials are discussed elsewhere (Osztás *et al.* 2016; Zalai-Gaál 2008; Zalai-Gaál and Osztás 2009; Zalai-Gaál *et al.* 2012); here, we therefore focus on the earlier Neolithic periods within the Sárköz region.

Having given a brief general overview of these sites, we will now focus on a few observations which seem pertinent for each of the three sites, in particular, the presence of ‘unusual’ burials within the settlement areas.

Early Neolithic burials inside ovens from Alsónyék-Bátaszék

The early Neolithic (fifty-eighth to fifty-sixth centuries cal BC) settlement at Alsónyék belongs to the north-western edge of the Balkan cultural complex known as the Starčevo culture. Given its size and the amount of features, Alsónyék stands out from the other known early Neolithic settlements in western Hungary

(Kalicz 2011).

In the southern part of the excavated area (subsite 5603), a coherent and considerable early Neolithic settlement concentration was found. Some 500 features were uncovered on about 2.5ha. Most are large irregular pits and pit complexes, varying in size and shape. Besides the roughly 20 fully or partly preserved ditches, several ovens were excavated, often dug into the sides and bases of pits. The approximately 60 dug in or fully subterranean ovens mostly appear in smaller or larger groups, though there are a few single ones. Numerous burnt daub fragments were found in the fills of the pits, many showing the imprints of wattle structures; other pieces of daub may previously have been part of further, already destroyed subterranean ovens. Roughly half of the ovens were oval or roundish, the others are longish and tubular. The state of preservation varies. The platforms, sometimes hardly burnt, were usually better preserved than the globular upper domes. Most tubular ovens had no domes.

So far, the remains of 25 human individuals with secure early Neolithic dates (17 of these confirmed by radiocarbon dating)¹ have been identified across the site as a whole (Köhler 2015). This number is remarkable, as despite the large geographic distribution of the Starčevo culture, the number of anthropological finds is very low (Köhler 2015; Minichreiter 1999; Paluch 2004; 2007; Zoffmann 2013). Among the skeletons, the number of females and children far exceeds the number of males (Köhler 2015, tab. 1; Naumov 2007, 255; Zoffmann 2013, tab. 1). Although the graves were scattered rather randomly across the site, in some cases two to four skeletons lay close together and were perhaps related to each other. Some bodies were buried in shallow pits around ovens in a position that cannot easily be characterised as careful burials. Many were found in an extreme, twisted position. Apart from a small vessel in the hands of a skeleton, grave goods are few. A crouched skeleton belonging to an adult male (feature 1061), buried in front of an oven, was covered with fragments of a large,

coarsely made bowl (Oross *et al.* 2016a).

Of the 25 Starčevo individuals at Alsónyék only 12 were fully articulated, the others were incomplete or not in full articulation, either due to the preservation of the bones or to the rescue excavation method, although ritual aspects might also be possible. Among the skeletons were seven children, six males and ten females and a further two adults of undeterminable sex (Köhler 2015, tabs 1–2). With two exceptions the orientation of the body could be observed, but shows such a high variability that no consistent pattern emerges. In 17 cases the body position could be ascertained; left-crouched bodies dominate ($n=11$), five individuals were lying on their right side and one was in a prone position.



Figure 5.1. Map of the study area with the main sites mentioned in the text. 1. Fajsz; 2. Alsónyék-Bátaszék; 3. Szederkény-Kukorica-dűlő.

The burials are spread across the whole Starčevo settlement in a relatively even way. A separate space, as mentioned by Kornelija Minichreiter for Galovo (Minichreiter and Botič 2010), could not

be observed, though the evaluation of the features and associated finds is not yet finished. The human remains were often found in the fill of pits, however there are some isolated burials. The vast majority are arranged in seven smaller clusters, with two to four skeletal remains in each of these. Two of these concentrations of human remains were found inside workshop areas, both of which consist of several subterranean ovens. Altogether five bodies were buried inside ovens, carefully arranged on their sides on the strongly burnt platforms (features 792, 1362, 1398, 1449 and 1531; [Figs 5.2–5.3](#)).

Feature 1398 is the southernmost of a group of three oval or round ovens, all with their openings oriented eastwards. The ovens came to light at the eastern edge of feature 1383, which was probably used as a workshop pit. Oven 1398 was round, had a strongly burnt baking surface and a relatively well-preserved dome. Inside the oven, a few centimetres above the platform, skull fragments, a few ribs, a thoracic vertebra and a left arm bone fragment were found; all remains belonged to an approximately one-year-old child ([Fig. 5.2](#)). The orientation and the body position cannot be determined.

Feature 792 was very similar. In the southern part of the extended pit complex 800, an area including remains of 13 subterranean ovens was documented. Approximately in the centre of this area, one of these ovens, also round, had an opening also facing to the east. Its dome was poorly preserved; its platform was plastered and well-burnt. Inside the oven, again a few centimetres above the platform, an incomplete skull, long bones of the arms and the legs, a few vertebrae, a few ribs, clavicles and scapulae, as well as fragment of the left ilium were found. The bones belonged to a child aged between 6 and 8 years. The body was oriented south–north and lay on its left side, placed very close to the oven's back wall. The central part of the skeleton (most lumbar and thoracic vertebrae and the bones of the pelvis) was mostly missing ([Fig. 5.2](#)).



Figure 5.2. Human remains inside ovens from Alsónyék (clockwise from top left: features 1398, 792, 1449, 1362).

Feature 1362 is again an oval oven, although somewhat larger and slightly elongated. Its narrowing opening also faces east. It was situated in the southernmost part of the excavated area, near three other hearths. The baking surface was well-burnt, but hardly anything remained of the dome. On the platform a complete and relatively well-preserved skeleton was found. It belonged to an adult woman, aged between 30 and 40 years. Her skull was in a fragmented state. On [Figure 5.2](#), only the upper part of the body can be seen, as the other bones were removed during the rescue excavation. The rest of the body, the *in situ* remains, revealed that the body was laid on its back, the head turned to the left, while the arms were probably raised in an upright position. We have no information about the original position of the lower half of the body.

Feature 1449, located at the eastern edge of the excavation, is a large, oval oven with a well-preserved and plastered platform and a low dome with a surrounding small oval pit. Its opening

faced east. On the platform, a well-preserved and complete skeleton of a 17–18-year-old woman was placed. The body is right-crouched, the skull, which was partly destroyed by the machine, was leaning on the edge of the oven (Fig. 5.2).

Feature 1531 is perhaps the most interesting. It is situated in pit complex 800, in the northern cluster of eight ovens. The oval oven has a well-preserved complete dome with two ‘chimneys’ (Fig. 5.3). Its opening faced south-east. Inside, close to the back wall, a complete right-crouched skeleton with an almost perfect north–south orientation was found. Except for the fragmented skull, the skeleton was complete and belonged to an adult female, aged between 40 and 50 years. Furthermore, in the middle of the northern ‘chimney’ a cranial fragment consisting of frontal, parietal and occipital bones was found. It possibly belongs to another female adult, aged between 30 and 50 years.

These five investigated individuals all shared more than one quite commonly occurring disease, such as porotic hyperostosis or *spondylosis deformans*. The latter is an illness common across the entire osteological material from early Neolithic Alsónyék. The skeletons inside the five ovens belonged either to children (features 1398 and 792) or to women (features 1362, 1449 and 1531).

There were no objects that could be interpreted as grave goods. The bones did not show traces of fire; the small blackish discolorations observed may have been caused by the ash from the platform. From this last observation, it follows that the dead were placed inside the ovens at a time when these features were no longer in use. All ovens with burials are of the same type, the only small difference are the chimney-like openings in feature 1531. The tubular, longish ovens did not contain any human skeletal remains.

The burial custom reported here has so far not yet been observed in a Starčevo context. Thus, the human remains from the subterranean ovens at Alsónyék represent a new facet of the burial

rituals of Starčevo communities. In general terms, the burial ritual of the early Neolithic seems to differ considerably from later Neolithic customs over the whole Carpathian basin and south-east Europe. On average Starčevo sites, complete skeletons or human skeletal parts usually lie scattered between settlement features or are buried in pits within the settlements, but are not concentrated in grave groups. As at Alsónyék, the number of burials uncovered does not show any correlation with the possible number of inhabitants of a settlement (Borić 2015; Lichter 2001; Minichreiter 1999; Naumov 2007, 255; Paluch 2004; 2007; Perlès 2001). Also, while most ‘unusual’ burials contain disarticulated human remains (Chapman 2010, 32–5; Croucher 2010), nothing speaks for a possible mutilation of the Alsónyék Starčevo skeletons. Nevertheless, they can be regarded as exceptional, atypical or special burial forms (Perlès 2001, 274).

Since most early Neolithic skeletons deposited near or inside houses or connected to ovens are those of children and women, we can presume that they were in some way symbolically related to the house (Bačvarov 2003, 28, 60, 87–8; Naumov 2007, 257, 259; Raczky 1982/83; Souvatzi 2012, 33), even if no dwellings were detectable at the Alsónyék settlement. Skeletons placed in an embryonic position inside houses, especially in closed and dark spots such as inside jars or ovens, might express the idea of returning to the maternal womb (Bačvarov 2008; Bánffy 1990/91; Gimbutas 1989, 148–9, 151; Naumov 2007, 258). Setting out from this possibility, the dark and closed space may have been the crucial factor when choosing a burial place, rather than the fact that this place happened to be a subterranean oven. Perhaps these features offered an especially strong connotation with the ‘dark’ and the ‘closed’. The idea of burying the dead on the heavily burnt oven or fireplace platforms finds parallels for instance in the Thessalian Dimini culture, at Visviki Magula (Aldem-Stern and Dousougli-Zachos 2015, 87, Taf. 28–9). Interestingly, this is also an infant burial.

The subterranean ovens uncovered at Alsónyék were dug inside pit complexes used for work activities and thus they were definitely not linked to any specific dwelling structures. Rather, outdoor cooking or baking activities can probably be associated with these groups of oval ovens. These areas of ovens may have been of special significance in social life. Open spaces with ovens may have been the venues for communal interactions both in everyday life and during feasts, with sharing food, telling stories and reviving memories (Matthews 2012, 200–1, 209). ‘The hearth is the symbol of the household, since it is the meeting place of male and female labour at which is created the source of sustenance for reproduction of the household’ (Haaland 2007, 169). This is the place where food is transformed from a natural to a cultural product, and hence food is not only for the body, but also ‘food for thought’, a medium for initiating and maintaining social relations (Haaland 2007, 169–70).

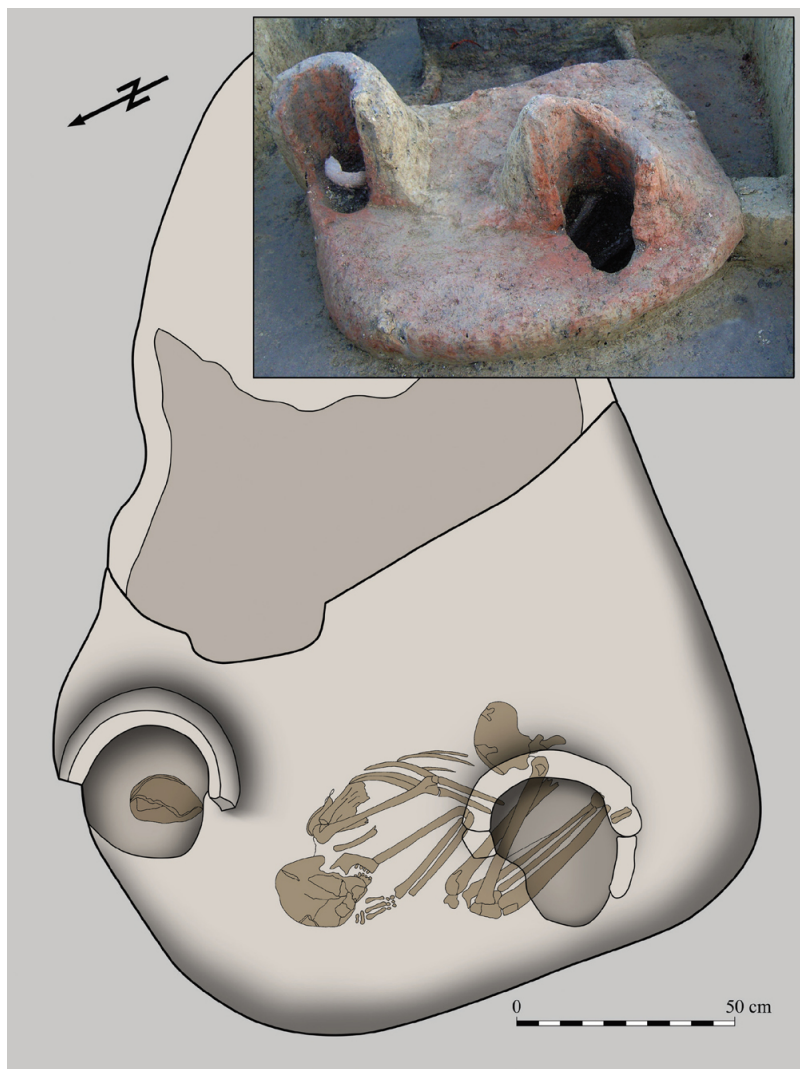


Figure 5.3. Feature 1531 from Alsónyék: a complete human skeleton and part of a fragmented skull found inside an oven.

Special burials at Szederkény-Kukoricadűlő;

South-west of the Alsónyék site, Szederkény lies among the south Transdanubian hills. A total of 66 Neolithic house plans could be

excavated in the three parts of this settlement. Although traces of the internal wooden architectural structures are poorly preserved, and no more than a few postholes could be documented, the buildings can confidently be identified from the longpits flanking both sides of the houses. The layout fully matches the general architectural principles of the central European LBK. The reconstructed house plans were without exception oriented north-east to south-west and arranged into a few parallel rows. The archaeological material of the households in the eastern and central parts of the site is characterised by the early Vinča pottery style (Vinča A1–A2 after Wolfram Schier's (1996) chronological system) along with some scattered elements of the early central European LBK. On the other hand, the pottery inventory of the houses in the western settlement part is best matched by the ceramics of the Ražište type within the Sopot circle, which appears to be a local variant of the early Vinča pottery tradition in the Danube region of southern Hungary and north-east Croatia. The combination of the early Vinča and Ražište ceramic repertoire with longhouse architecture that is otherwise familiar from the LBK world makes a detailed investigation of this mix of things and practices possible and puts the issue of cultural entanglement into particularly sharp focus (Jakucs and Voicsek 2015; Jakucs *et al.* 2016).²

A total of 50 Neolithic settlement inhumations were uncovered at Szederkény, the overwhelming majority in the eastern (24) and the western (23) settlement parts. The deceased were buried in own grave pits or in refuse pits, while some of the graves had been dug into sections of the longpits flanking the houses. The deceased were laid to rest in a crouched position; among the better preserved bodies, the majority were crouched on their left side. Only a few settlement burials contained grave goods or artefacts that had been part of burial clothing (Jakucs and Voicsek 2015).

Feature 3036, a roughly oval pit complex in the western settlement part, contained the remains of four individuals (Fig.

5.4). These deserve special attention due to the placement of the deceased and the associated funerary rites. A double burial came to light in the middle of the pit complex, with two bodies in crouched position, with slightly bent arms and knees, oriented in the same direction. The term ‘double burial’ is used in a rather peculiar sense here, as the second body was buried exactly on top of the first. The lower skeleton (burial 3051) was laid on its left side, the upper one (burial 3050) on its right side. The faces of the two deceased persons were turned towards each other. Numerous animal bones and fragments of different vessels were found lying on and around the skeletons, apparently scattered above the bodies (Fig. 5.4a–c). As the pottery fragments typologically belong to the Ražište style, and given the modelled radiocarbon date (5210–5180 cal BC, 95% probability) from the upper skeleton (Jakucs *et al.* 2016), the double burial can be dated to the late period of the settlement.

A further two bodies were deposited on a ledge along the north-eastern side of the pit complex. Both individuals were found in left-crouched positions; one burial (burial 3036) was oriented east–west, the other (burial 3029) north–south. The latter was the skeleton of a child (infans II, c. 14 years old), it was entirely covered with fragments of large storage vessels (Fig. 5.4a, b, b1).

Multiple burials from the second half of the sixth millennium cal BC are not unique; nevertheless, cases with clear indications that the deceased were deliberately buried in a common grave pit are rare. They most frequently occur in the central European LBK area (e.g. Otzing, Aiterhofen and Sengkofen), where they are mostly either remains of children, or of one adult and one child buried together (Hofmann 2009, 230; Nieszery 1995; Peschel 1992). In the Carpathian basin, the best analogies to the double burial are found in the central part of a pit complex from Budapest-Skála Áruház, and at Cífer-Pác in western Slovakia. In these cases, the deceased of roughly the same age were buried in common grave pits, they were oriented in the same direction and

placed side by side (Bistáková and Pažinová 2010; Horváth and Horváth 2013). However, in all the above examples the deceased were placed into a common grave probably at the same time, in the course of one single burial action. In the Szederkény case, although the two bodies were positioned exactly on top of each other, it could be clearly observed that there was a 30cm thick layer of soil between them, which contained ceramic fragments (mainly from in between the skulls). According to this stratigraphic situation, it seems very likely that the two burials should be regarded as two separate events, even if the time span between them remains unknown. The careful laying out of the upper individual and the symmetrical arrangement of the two bodies, however, clearly indicate two circumstances. First, that the two individuals must have been closely related during their lives; and second, that the Szederkény Neolithic community had a firm intention of creating memories through this arrangement by burying the second person in the grave complex. After the second funeral, as a closing act of the sequence, the grave was covered with smashed pottery pieces of both storage vessels and fine ceramics. The closed context of this assemblage directly above the deceased excludes an interpretation of these finds as naturally accumulated or residual. Also, some articulated animal remains, i.e. pieces of meat, were lying among the potsherds as possible traces of a funerary feast. Taken together, the sherds and animal bones can perhaps be considered as the sign of a repetitive mortuary rite during and possibly also after the funerals.



Figure 5.4. Pit 3036 from Szederkény-Kukorica-dűlő, which contained remains of four individuals. Images labelled b1 and c1 were taken at a lower depth than b and c, respectively.

The other ‘unusual’ inhumation within the same pit complex is the child burial covered by sherds (burial 3029). According to the *in situ* observation, the whole body was hidden under the fragments of two large storage jars carefully placed on the dead body. There were no other finds or grave goods.

The custom of burying human remains – often cremated or otherwise manipulated – inside a ceramic vessel occurs in the early Neolithic Körös culture in the Carpathian basin. For instance, burnt human skull remains were found inside the anthropomorphic vessel at Gorzsa (Gazdapusztai 1957, 12, tabs I.3, II). There is a series of similar, well documented cases within the early farming communities both in south-east and central Europe (Bačvarov 2006; Naumov 2007, 260; Orelle 2008; Sebők 2013, 254). Yet, the action of covering the deceased with pottery fragments, while the vessel did not serve as a ‘container’ of the body, should be understood as the closing stage in an unusual funerary rite, which probably refers to a specific, local mortuary habit. A later (fifth millennium cal BC) similar instance, a special version of the so-called ‘jar burials’, was found at late Neolithic Avgi in Greece. Here, small pots containing cremated human bones were covered with fragments of large storage vessels: perhaps a similar, but differently adapted ritual (Stratouli *et al.* 2010).

Apart from the example of a Starčevo burial covered by a huge storage vessel from Alsónyék (Oross *et al.* 2016a), this practice has been recently discussed with examples dating to the second half of the sixth millennium cal BC in the Carpathian basin (Sebők 2013). The common element in this practice is that all recorded examples, just like in Szederkény, are remains of children or young individuals. From Transdanubia, only two similar cases have been documented from this period (Bölcske-Gyűrűsvölgy and Paks-Gyapa), both from settlements located along the right bank of the Danube, north of Szederkény (Füzesi 2013; Sebők 2013). There are also a few similar features from the Alföld region

(Kántorjánosi-Homoki-dűlő; and Pusztataskony-Ledence); both belong to the later phases of the Alföld LBK (Füzesi 2012; Sebők 2013). Interestingly, to the best of our knowledge, there are no perfect analogies to this practice south of the Carpathian basin from the seventh to sixth millennium cal BC, and it is also hard to find similar phenomena in the western LBK funerary rite. Although the data are quite scattered, it can be assumed that covering the bodies of the young deceased with pottery fragments is a custom peculiar to the zone where the first south-east European farming communities reached their northernmost settlement boundaries. This assumption would match the fact that the Sárköz and south Transdanubia were the last areas directly reached by early Balkan farmers along with their south-east European early Neolithic culture.

The concentration of burials in a particular context is not an unusual feature in sixth millennium cal BC settlements (Bánffy *et al.* 2010; Minichreiter and Botić 2010; Oross and Marton 2012). Nevertheless, that no further finds from other parts of the pit came to light confirms our assumption that the bodies were not buried secondarily into an already used refuse pit, but that the structure was specifically created for use in repeated ritual actions. Although the relationship of the four buried individuals and the time-span between the start and end of the funerals remain uncertain, the special rite and the repeated disposal of the dead might shed some light on a kind of continuity of symbolic practices in the Neolithic of the region.

A unique secondary burial from Fajsz-Garadomb

The enigmatic amalgamation of some repeatedly occurring southern impulses with the existing manifold cultural picture becomes even more complex by the addition of yet another impact: that of the north Balkan Sopot groups. The discovery of an

intensive Sopot occupation at the turn of the sixth to the fifth millennium cal BC at Alsónyék can be regarded as evidence for the above-mentioned multiple impulses from the Balkans. At this spot, about ten large pits, small sections of four more or less parallel ditches and 20 burials were excavated. In spite of the relatively few features, a very rich finds assemblage came to light. Most graves contained grave goods: pots, *Spondylus* ornaments and chipped and polished stone artefacts (Oszrás *et al.* 2012).

The skeletally robust bodies from the Sopot settlement of Fajsz-Garadomb provide a firm osteological and archaeological basis for tracing several archaic features of this group. Taken together, all aspects seem to match the ancient DNA picture, which unsurprisingly showed that the Neolithic gene pool of south-eastern origin was complemented with a considerable amount of U-haplotypes (Szécsényi-Nagy 2015; Szécsényi-Nagy *et al.* 2014; 2015). After the arrival of the first farmers of Balkan origin in the Sárköz and Transdanubia, such a complementary pre-Neolithic signal in the genetic picture appeared for the first time with the Vinča and Sopot people. Our third case study thus turns to the Sopot occupation of the eastern, Kalocsa Sárköz. This area has been investigated by our work group since the early 2000s, in the form of field surveys, geomagnetic prospection, boring and excavations that primarily concentrated on two coeval and neighbouring sites. One of these is the Fajsz-Kovácsalom tell, an eroded but still magnificent settlement mound, the most north-westerly Neolithic settlement of this type in Europe. It lies in the immediate vicinity of the Danube and was surrounded by a former branch of the river. Coring and geophysical investigations indicate a tell settlement with a 280cm thick sequence. Meanwhile, the current state of preservation of the site allows to estimate the extent of erosion (Rassmann *et al.* 2015b, 5). The other site, lying just 2km south-east, was initially thought to be a horizontal site: Fajsz-Garadomb.

These two sites have been long known as places with

settlement traces from almost all archaeological periods, from the early Neolithic to late medieval times. Especially important is their occupation at the turn of the sixth to the fifth millennium cal BC, when both became major settlements of the Sopot culture, which is related to the Vinča population groups and like them arrived to the Sárköz area from the northern Balkans by crossing the rivers Dráva and Danube. The Fajsz-Garadomb site contained an 80cm thick sequence of Neolithic cultural layers, including at least one unburnt Sopot house. Given the probably coeval settlement layers of the two sites in Fajsz, it is possible that the 'horizontal' Garadomb site was abandoned for some reason by the Sopot people, who then continued to inhabit Kovácsshalom, which evolved to a tell settlement. Further investigations could answer the question whether Garadomb had the same potential of development. Initial phases of tell sites can also be observed elsewhere on the Hungarian Plain, for instance at Öcsöd-Kováshalom, to name one contemporaneous example possibly related to Fajsz (Raczky 1986; 2009; Raczky *et al.* 1985).

Three excavation campaigns were carried out at Fajsz-Garadomb from 2006 to 2008, uncovering 600m² and documenting the remains of several different periods (e.g. late Copper Age, late Bronze Age, Avar Period etc.). Yet the vast majority of features, mainly large pits, can be connected to the Sopot culture occupation (Bánffy *et al.* 2014, 354). This includes four graves reflecting different funerary practices, although two of the bodies were buried in a supine position, which is exceptional in the Neolithic context, where the crouched position dominates. Extended bodies lying on their back are atypical for the Neolithic in the Carpathian basin, but are known from other Sopot sites in Transdanubia, for example Alsónyék or Bicske-Galagonyás (Makkay *et al.* 1996; Osztás *et al.* 2012). A more distant example for this rare ritual comes from the late Neolithic cemetery of Kisköre in the Tisza region (Korek 1989, 39–45, figs 23–9).

The four graves of the Fajsz-Garadomb settlement come from

two distinct areas, as is typical for Sopot burials in Transdanubia (Regenye in press). One of the four graves from Garadomb (feature 156) is the inhumation of a 30–40-year-old man, lying extended on his back in a regular grave pit, overlain by an oval settlement pit (feature 96). Different kinds of grave goods were found in the grave: ceramic vessels, *Spondylus* ornaments, chipped stone and bone tools. Feature 96 was in turn cut by the grave of a 0.5–1-year-old child (feature 157). Although its position could not be precisely observed, the child lay inside a further regular grave pit and was buried together with a *Spondylus* ornament.

The other small group of graves was uncovered approximately 20m away and was also related to an extensive oval settlement pit (feature 71). Inside this pit, the manipulated remains of a human individual were placed (Fig. 5.5). This is a collection of bones, not in anatomical order, of a 25–30-year-old male (feature 65) whose bones were secondarily arranged some time after his death, when soft tissues had decayed. The remains lay in a small depression close to the base of the pit, amidst a mixture of settlement refuse; however, two small clay human figurines accompanied the human remains. The skull and long bones were meticulously placed together, while the ribs were laid crossways under the long bones (Fig. 5.5). The whole assemblage was found in an almost perfectly round shape, so it is possible that the bones were packed in an organic container or wrapped in cloth, thus preventing the careful arrangement from falling apart. In spite of the fact that the bones were placed in a refuse pit, some circumstances indicate that this burial was somehow connected to the others in this grave group.



Figure 5.5. Feature 65 from Fajsz-Garadomb: secondary burial.
 Orange: daub fragment, light orange: sherd, white: freshwater shell,
 light blue: clay figurines.

Apparently, this burial is the result of some kind of post-mortem treatment. Such cases have been discussed by both archaeologists and osteologists in order to ascertain if the activity related to some violent act like cannibalism (Orschiedt 1999) or to a ritual to clean the bones of soft tissue (Kuijt 1996, 321; Schulting *et al.* 2015, 38). In some cases, bones found in secondary positions with cut marks allow both interpretations (Gligor and McLeod 2015). Further south-east of the Carpathian basin, e.g. in the Aegean Neolithic, it is unclear whether these mortuary practices reflect particular types of social organisation, or whether there is disjuncture between burial customs and other aspects of social life (Borić 2015, 939). Nevertheless, the manipulation of the body is not unknown in the Transdanubian Sopot orbit either: one of the burials at Bicske-Galagonyás (grave 1) had one leg, still in anatomical connection, redeposited under his head (Makkay *et al.* 1996, 20, fig. 6). The custom of mutilating the bodies before or during burial continues in the great variety of ‘*Sonderbestattungen*’

in the Lengyel culture, which in many aspects was influenced by the Sopot communities (Chapman 2000; Zalai-Gaál 2009).

The Fajsz-Garadomb secondary burial does not show any traces of violence; on the contrary, the disarticulated bones rather reflect a new, careful, almost artistic re-articulation of the body of the deceased man. Moreover, the orientation of the long bones and the skull, as well as the small depression containing the bones, had the same, south-east–north-west orientation as the other burials at the site. Taken together, this assemblage can be regarded as a memorial act similar to a cenotaph, a symbolic grave. Cenotaphs do not contain human remains, yet often have grave goods and indicate care and respect for a deceased person who, presumably, could not be buried together with his/her fellows in the community. Among the 368 graves found in the early Lengyel cemetery at Zengővárkony are some cenotaphs with grave goods similar to regular inhumations (Chapman 2010; Dombay 1960; Zalai-Gaál 1984). Cenotaphs are often interpreted as if they were normal graves within the cemetery, since although they lack bones they often have grave goods matching the social status and merits of the deceased person. In the Fajsz-Garadomb secondary burial the bones are present, but the whole arrangement suggests closer similarities with cenotaphs rather than with disarticulated or especially with mutilated burials.

Besides the careful arrangement of the skull with the long bones and smaller skeletal parts, wrapping the assemblage in some organic material in the pit and the similar orientation within the small grave, yet another circumstance suggests a cenotaph-like interpretation of the assemblage. This is the presence of the two small clay figurines.

The finds lying on and around this secondary burial could be considered as the normal fill of the refuse pit. However, the two female figurines (Fig. 5.6) look rather like traces of an intentional deposit related to the burial. They are similar in size, the flat shape of the body is typical for both of them and the broken arms

and legs may have been in a similar position. Both figurines are fragmented, probably broken intentionally along the longitudinal axes of their bodies. This fragmenting action could have been easy due to an internal perforation that runs parallel to the long axis. One figurine has a deeply incised meander decoration, quite typical for both early Tisza vessel decorations and early Tisza figural representations (Fig. 5.6, 1).

Having said that the secondary burial was found inside a refuse pit, we need to explain why we interpret the burial and the two figurines as connected, and the latter as possible grave goods for the deceased. There is a clear stratigraphic connection between the secondary burial and the figurines. These were placed exactly on the base of the small depression created inside the pit, to accompany the small parcel in its organic container, hiding the bones. Both figurines were placed at a distance of c. 40cm from the skull.



Figure 5.6. Fragmented clay figurines unearthed in feature 65 from Fajsz-Garadomb.

There are some further, interesting implications regarding these small clay figurines. Since both show strong connections with early Tisza incised motives and figural art (Bánffy 1985; Raczky 1986, fig. 8; 1987), they could indicate long-distance connections with the east, beyond the river Tisza. So, besides offering an interesting chronological anchor within the Sopot and early Tisza phases, the clay figurines may reveal something about

the place where the man possibly died. This is certainly thin ice, but there could be a small chance that the deceased man, who must have been buried somewhere far from Fajsz-Garadomb until only his bones remained, may have been brought back to his original home settlement from the east, from the Tisza region. Following this line of thought, the small figurines that must be imported from that area may have been meant to accompany his remains to their final resting place. This would not only explain the occurrence of two imported objects buried together with someone who died far from Fajsz, but would also be a strong indication for an emotional link between this man and some early Tisza communities.

Certainly, the option must also be borne in mind that the two small figurines had been discarded earlier and were simply found while placing the secondary burial. Yet it still remains a fact that the figurines were laid symmetrically under the secondary burial. This connection alone is interesting. Across the Neolithic of the Carpathian basin and in most areas of south-east and central Europe, thousands of small clay figurines are known, but – with very few exceptions – exclusively from domestic contexts. They occur within houses or in cultural layers around houses, often thrown into garbage pits (Bánffy 1990/91). Figurines did belong to the living and not to the dead; they were not used as grave goods. No matter if the Fajsz-Garadomb figurines were brought to the site together with the remains of the deceased young man or were accidentally found in the pit while preparing the small depression: figurines were used in a burial act at this Sopot site.

The pit that contained the secondary burial was also cut by a regular grave pit with a further burial (feature 165, an inhumation of a 30–40-year-old man). This skeleton was found at the base of the feature, also in a supine position. In both cases, the orientation of the bodies was south-east–north-west; the position of the skull fragments of the child burial also fit this orientation, as does the secondary burial.

Discussion

This short paper began with a discussion of some unique, almost bizarre burials of the earliest farmers at Alsónyék in the western, Tolna Sárköz, dating to the beginning of the sixth millennium cal BC. We then moved to some specially arranged nearby graves from the intriguing amalgamation of LBK and southern Vinča groups from Szederkény, dated to the last centuries of the sixth millennium cal BC. Third, an example from the eastern, Kalocsa Sárköz was presented: an unusual secondary burial from the Sopot settlement at Fajsz-Garadomb. This group, similar to the Vinča people, arrived from the south at the turn of the sixth and fifth millennium cal BC. These special burial customs can be interpreted as manifestations of a broader regional development.

Despite the still limited number of burials from the sixth millennium cal BC, we have sufficient information to outline the mortuary practices of the investigated area. Inhumation graves within settlements in a crouched position, with a clear preference of the left crouched variant, could be regarded as regular both for the Starčevo (Paluch 2004; 2007) and the LBK communities of the Carpathian basin (Oross and Marton 2012). Burials were associated with residential areas, formal cemeteries have not yet been discovered in western Hungary. In the case of the LBK, this is all the more conspicuous when compared with the extensive burial grounds of more westerly areas of central Europe (Nieszery 1995; Peschel 1992) and with the smaller-scale but existing evidence for cemeteries from Slovakia (Bistáková and Pažinová 2010; Pavúk 1972). The Szederkény site shares the same tradition as the LBK settlements of the region. The Sopot burial ground from Alsónyék represents a period that witnessed substantial transformations in the sense that burial places were not yet completely separated from the settlements, but graves occurred in a compact cluster in an area that had already lost its original function (Oross *et al.* 2016b). The location of the Fajsz-Garadomb graves and their relationship to other features of the site resembles earlier

traditions.

The case studies cover the first millennium of sedentary life in the region, when burial places and the scene of everyday life overlap each other, at least in the archaeological record. They also reveal the complexity of rituals associated with death and aspects of mortuary practices that are rare or unusual when compared with those considered regular. These customs and habits were probably regarded as extraordinary treatments by contemporary community members. Nevertheless, they were an integral part of the local and regional tradition; our judgement about irregularity is based on the currently known data. The phenomena presented above must have been rooted in a ritual of social memory-making by burying the dead in special ways within the settlement.

Investigating the early fifth millennium Sárköz occupation, the Lengyel period that partially overlapped with the Sopot phase must be at least briefly mentioned. At Alsónyék, at a place where nobody expected a major site, i.e. in the vicinity of well-known and important settlements (including the eponymous site of Lengyel), the immense surface uncovered contained more than a hundred large houses, with many more visible on the geophysics plot – and no less than 2300 graves. This is only the number of excavated burials. Among the burials are many with exceptional grave goods, similar to, but even richer and more numerous than those from Fajsz-Garadomb. Some graves were even covered by a large construction, a kind of ‘house of the dead’.

While this study is emphatically not touching upon questions of the Lengyel period burial rite, it has to be borne in mind that all three previous phases, which together encompass the millennium before the onset of the Lengyel settlement of the Sárköz, should somehow be regarded as forerunners. We now know that a series of cultural (and genetic) elements of the first farmers, the people of the Starčevo group, survived for a long time, whilst they constantly underwent changes due to both social restructuring and new cultural (and genetic) input from the northern Balkans. In this

sense, each of the special burial customs taken from almost the entire sixth millennium cal BC, from the Starčevo, LBK, Vinča and Sopot sites of the Sárköz, throws a special light upon the enormously rich Lengyel burial rituals of the first half of the fifth millennium cal BC.

Thus, the present short paper is a record of some possible local antecedents for the specifically rich Lengyel mortuary traditions – a theme that has been our largest concern, perhaps, within our long and happy cooperation with Alasdair – and hereby, an expression of our respect, honour and friendship to Alasdair.

Notes

1

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2

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field director, lower part, recumbent...

The chosen ones: unconventional burials at Polgár-Csőszhalom (north-east Hungary) from the fifth millennium cal BC

Pál Raczky and Alexandra Anders

Through his unique ability to set new research findings into a European context, Alasdair Whittle represents an exceptionally creative mind in European prehistoric studies. His comprehensive surveys are adequate testimony to his extraordinary ability to work at a grand scale and paint a broad picture (Whittle 1985; 1996). It is only natural that he had his own personal favourites among the remarkable regions of the European Neolithic, in which he launched his own research projects. It is perhaps no exaggeration to claim that the Neolithic of the Great Hungarian Plain held a special fascination for him from the 1990s onward,

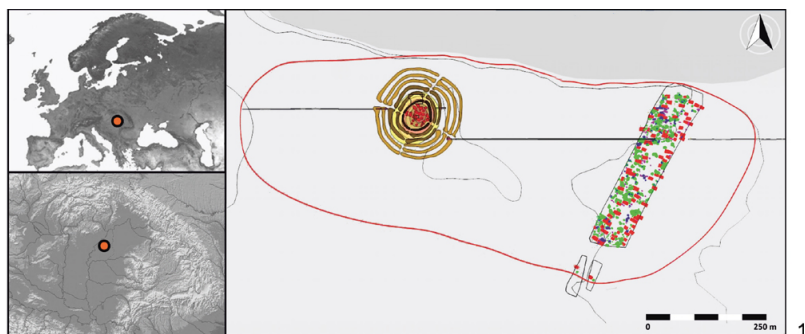
reflected, for example, by his very rewarding investigations at the early Neolithic site of Ecsegfalva 23 (Whittle 2007). Naturally, these research projects deepened his interest in the Hungarian Neolithic in general and thus he had a particularly keen interest in the new archaeological investigations at Polgár-Csőszhalom, begun in 1989, whose goal was to find answers to the many questions raised by Ida Bognár-Kutzián's small-scale excavations in 1957 within a broader context and by integrating the findings of a wide range of interdisciplinary studies. He cited the evidence from Polgár in his masterly study of the changes of how individuals were represented from the early Neolithic to the early Copper Age in the Great Hungarian Plain (Whittle 2003, 55–64) and he also discussed in greater detail the burials uncovered among the houses of the single-layer settlement associated with the Csőszhalom tell and enclosure. One of his most recent papers addresses the problem of enclosures (Whittle 2013).

In the light of the above, it is quite understandable that we chose the burials of the Polgár-Csőszhalom settlement complex as the subject of our study written in honour of Alasdair. Described in the following are four burials uncovered in four different locations of the site, which diverge from the normative practices observed in the other burials at Polgár and illustrate an uncommon expression of identity in their particular contexts.

‘Living and dying well together seem to be key themes in the history of the European Neolithic’ (Whittle 2015, 1061): The case of Polgár-Csőszhalom

The investigations at Polgár-Csőszhalom have shown that this 38ha settlement complex¹ was made up of a 4ha tell surrounded by an elaborate system of enclosures and a horizontal settlement covering 34ha (Fig. 6.1), which evolved from the preceding ALP (Alföld Linear Pottery culture) settlement concentration and inter-

village nucleation in the Polgár Island micro-region extending over 65–70km². However, the Csőszhalom settlement did not evolve on one of the earlier late ALP settlements in this natural ecological region, but in an entirely new location around 5000 cal BC (Raczky and Anders 2009, 40–3), suggesting that the evolution of the Csőszhalom settlement within a relatively short span of time lasting no more than 100 to 150 years cannot be simply explained by a mere population concentration, but rather reflects the emergence of a large community with a differing social organisation in a new location, whose material and spiritual culture diverged significantly from that of the preceding period. This is all the more remarkable because it seems unlikely that a demographic aggregation of this scale had been sparked by a single element in the dynamics of community building (Birch 2013, 7–11; Chapman 2015, 166–71; Duffy *et al.* 2013; Parkinson 2006, 23–37). Theoretical considerations would in themselves suggest that kinship, corporate, economic, ritual and a host of other factors may all have been active forces in the dynamics that shaped the new spatial configuration embodied by the settlement. The colourful diversity of the norms governing the Polgár-Csőszhalom community seems to echo the many varieties in community configurations appearing in ALP households as reflected in the organisational modules of a wider and more complex social space (Whittle and Bickle 2013, 385–401).



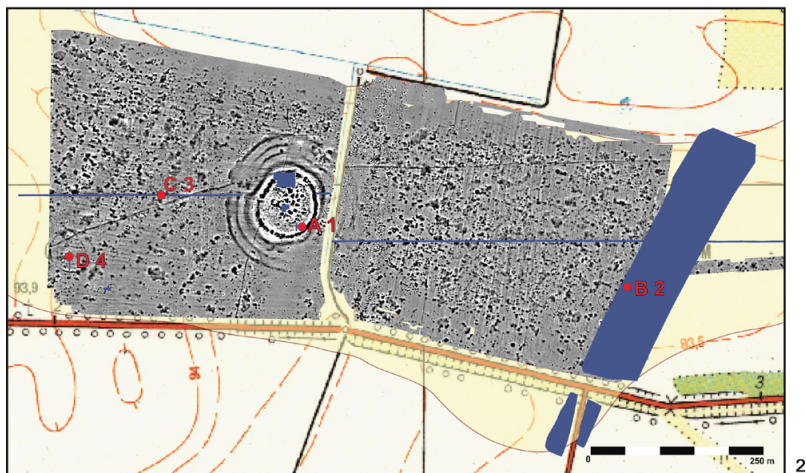


Figure 6.1. Polgár-Csőszhalom. 1: the topography of the tell enclosed by a ditch system and the horizontal settlement with the investigated areas (the reconstruction is based on magnetometer surveys, field surveys and excavations), 2: magnetometric plan of the site with the excavated areas and the locations (A–D) of the burials (1–4) mentioned in the text.

The late Neolithic population of Polgár-Csőszhalom created and maintained an extraordinary communal monument at the onset of the fifth millennium cal BC through the construction and continuous upkeep and development of an artificial tell mound and an enclosure/palisade system. This macro-structure and its buildings embodied a cultural hybridisation by merging two worlds: it fused the enclosures of the Transdanubian Lengyel culture (Pásztor and Barna 2013) and, from a wider perspective, of the central European *Kreisgrabenanlagen*/rondels, with the settlement mounds of the Tisza–Herpály complex, i.e. with the world of Balkanic tells (Chapman 1997a; Kienlin 2015, 7–32; Raczky 2015). At the same time, the creation of a new physical spatiality, of a new formalised communal space, distinct and separate from the existing settlements, can be seen as the expression of an entirely novel social space/time configuration in

the Upper Tisza region (Gramsch 2015, 346–7; Sherratt 2005). The short- and long-term processes constitute a specific heterochronic system at the Polgár settlement complex comprising two fundamental spatial organisations (the horizontal settlement vs. the tell and the enclosures).

Monumental community structures, whether tells or enclosures, are imprints of a long-term social cohesion and cultural memory (Furholt and Müller 2011; Raczky and Anders 2008). New identities and new expressions of identity linked to the novel attitudes to space and time appeared across Europe at this time, including in the Tisza region (Bailey 1999; Borić 2015; Chapman 1989; Pawn 2011; Raczky and Anders 2006; Salisbury 2012; Siklósi 2013). Within this broader interpretative framework, the distinctive spatial configurations of the Polgár-Csőszhalom settlement provide the backdrop to the interpretation of the burials deposited in various contexts (Anders and Nagy 2007; Bánffy and Bognár-Kutzián 2007; Raczky and Anders 2006; 2008; Siklósi 2013).

At the same time, we are fully aware that only one part of the quotidian identities of the Neolithic community at Csőszhalom was expressed in the mortuary sphere and that even these expressions of identity were ‘re-interpreted’, most likely during the mortuary process, and different statuses attained their final display as a result of manipulation through ritual transformation (Chapman 2000; Fowler 2013; K. Hofmann 2013; Siklósi 2013).

The Csőszhalom burials in their space/time setting provide a ‘general material domain’ (Raczky and Anders 2008) of definition, from which specific grave associations stand out through appearances different from the main trend. In our paper we focus on some of the unconventional burials, although in a certain sense all of the burials could have been unconventional. In studying the four chosen graves in the framework of all the burials uncovered in Polgár-Csőszhalom, we were looking for answers to the following questions:

•

Issues of representation. From the approximation of the demographic data it is clear that the majority of the dead at Polgár-Csőszhalom have remained archaeologically invisible. In this sense the mortuary record has no real representative value. However, the uncovered burials preserve a spectrum of human actions which is relevant to the local community and past cultural and social norms.

•

Spatial patterns. What kind of principal rules in mortuary practice can be observed between the different locations of the site?

•

Questions of space and time. What kinds of differences or similarities existed between the graves found in contemporary but different locations of the settlement, and between the graves found in the same location? We argue that the physical loci of the burials were connected with local process of symbolic 'place making' as well as creating and manipulating social remembrance at an intrasite scale.

•

Grave goods. The deposited grave goods also preserve a particular prestige value and symbolic meaning. The grave goods in their specific compositions constituted individual definitions for the deceased persons and different material associations could carry similar social estimations. In this context, how can we define 'common' or 'uncommon', and what could the associations and numbers of grave goods mean?

•

Age and gender. Among others, the body positions and types of grave goods followed strict gender-specific rules

that were observable even in children's graves.

•

Specific actions connected with mortuary processes. How were objects manipulated in the funerary setting and what kinds of artefact biographies can be identified?

Mortuary contexts in Polgár-Csőszhalom

The ongoing excavations at Polgár-Csőszhalom from 1957 to the very moment this article was written have continuously enlarged and enriched our knowledge of this most unusual site. The past decades have seen an immense increase in the number of excavated settlement features and the artefacts recovered from them, as well as in the identification of the locations of various activities. According to our current knowledge, the 38ha large site is made up of a tell settlement, a multiple enclosure system ringing the mound, a single-layer settlement and another double enclosure system (Raczky *et al.* 2014; [Fig. 6.1](#)). In addition to various settlement features, burials have also been uncovered in these locations.

Location A: In autumn 1957, Ida Bognár-Kutzián opened a 2 × 12m large trench in the middle part of the Csőszhalom settlement mound, which she excavated to a depth of 4m. She uncovered seven burials, of which six can be securely associated with the lowermost occupation level (Bánffy and Bognár-Kutzián 2007, 216–9). Another 14 burials were excavated during subsequent campaigns between 1989 and 1994 (Anders and Nagy 2007), bringing the total number of burials in this location to 21. A grave containing an extended inhumation burial was found in 2001 in trench V, opened for the exploration of the eastern entrance to the enclosure system ringing the tell.

Location B: A north–south oriented area east of the tell, approximately 400m by 90–100m in extent and revealing part of the 34ha horizontal settlement at Polgár-Csőszhalom was explored

during the rescue excavation preceding the construction of the M3 motorway between 1995 and 2004. A total of 123 burials were uncovered in the excavated area (Anders and Nagy 2007).

Location C: In 2006, we opened an east to west sounding trench through the site, thereby creating a transect of $1000 \times 2\text{m}$. The area of the tell was not included in this transect, meaning the sounding trench had an eastern and western section. An unusual burial came to light in the western section, west of the tell settlement (Raczky *et al.* 2014).

Location D: In 2013, a new geophysical survey was performed, in the course of which a second enclosure was identified some 200m south-west of the main enclosure system ringing the tell. The new enclosure identified by this geophysical survey consisted of two concentric ditches. The diameter of the inner one is c. 40m, that of the outer one c. 60m. In 2014, we opened a $32 \times 1\text{m}$, north-south-oriented trench which cut through the anomalies of the assumed ditches. We uncovered an inhumation burial in the trench's northern section (Raczky *et al.* 2014).

Seventy-two of the 147 burials currently known from the Polgár-Csőszhalom site contained grave goods (Fig. 6.2). We selected four of these, which shall be described and analysed in detail below. Admittedly, our choice was not governed by wholly rational considerations – we always regarded these four burials as being particularly extraordinary in some way.

Burial 1, location A. Grave from the tell-enclosure complex: grave 3

The grave pit was 75–100cm wide, over 200cm long (both ends of the grave pit extended under the trench wall) and 475cm deep (146cm from the prehistoric topsoil level).² The grave contained the burial of an adult man laid to rest on his back in an extended position with the legs slightly bent. The grave was oriented east-west. The foot bones and the right hand were not found, even

though the grave was undisturbed. According to the excavator's opinion, the right foot had been intentionally removed (Fig. 6.3.1).

Grave goods:

1.

Nineteen *Spondylus* beads; their exact position in the grave remains uncertain, but three of them were beside the left elbow. L. 0.8–2.4cm, diam. 1.2–1.8cm (Fig. 6.3.2–4).

2.

Elongated shoe-last axe with trapezoidal cross-section, made of black metamorphic rock (perhaps nephrite) and placed near the outer side of the left lower arm, by the elbow. The heel is flat with traces of use-wear from percussion. There are no use-wear traces on the convex edge and on the convex dorsal face. Striations can be seen on the flat ventral face. Together with the surface damage on the mesial part of both convex sides, these traces suggest hafting parallel to the edge. The unpolished, rough patches near the heel probably represent the original surface of the raw material. L. 13.5cm, W. 2.4cm, Th. 1.6cm (Fig. 6.3.5).

3.

Irregularly triangular shaft-hole adze with rectangular cross-section, made of black metamorphic rock (perhaps nephrite). The adze was perforated near the heel, parallel to the edge. The heel is oblique with traces of use-wear from percussion. There are no use-wear traces on the convex edge and on the convex sides. Small crushing marks can be seen on both faces around the shaft hole, but these were in part re-polished subsequently. L. 18.5cm, W. 5.5cm, Th. 2.5cm, diam. of shaft hole 2cm (Fig. 6.3.6).

4.

Boar mandible with tusks, west of the skull, with the teeth partly resting on the upper end of the burial's right upper

arm, now lost.

5.

Pottery sherds and a patch of ochre on the grave floor were also found in the grave.

Burial 2, location B. Grave from the horizontal settlement east of the tell-enclosure complex: grave 836/1827

The rectangular grave pit was 90–110cm wide, 250cm long and 100–103cm deep. The grave contained the burial of a 51–57-year-old woman in the *maturus* age category laid to rest on her back in an extended position, with the skull tilted to the left side (Fig. 6.4). The right arm was bent at the elbow and rested on the upper body, the left arm lay extended beside the body. The legs were extended, with the lower legs tightly beside each other and the feet on each other. A 4–5cm thick brownish discolouration running parallel to the grave wall on three sides could be noted on the grave floor, perhaps the remnants of a coffin. The grave was oriented east–west (Fig. 6.5.1) (Anders 2009; Raczky and Anders 2006, 28–9).

Grave goods:

1.

Double-strand headdress of 82 cylindrical *Spondylus* beads, with the two strands threaded through six larger beads in the centre, on the skull. L. 0.9–2.0cm, diam. 0.9–1.4cm (Fig. 6.5.2).

2.

Necklace of 43 cylindrical *Spondylus* beads (L. 1.1–2.4cm, diam. 0.8–1.4cm), alternating with 24 smaller *Spondylus* beads in the middle (L. 0.2–0.3cm, diam. 0.3cm) and 20 perforated deer canines (L. 1.5–2.3cm) (Fig. 6.5.3).

3.

Necklace of 237 tiny and two cylindrical *Spondylus* beads and a deer canine. L. 0.2–1.1cm, diam. 0.3–0.6cm (Fig. 6.5.4).

4–6.

Three *Spondylus* shell armrings on the right upper arm. Diam. 8.3×7.5 cm, 8.1×7.8 cm, 8.4×9.5 cm, W. 1.0cm, 0.8–1.9cm, 1.8–3.9cm (Fig. 6.6.5–7).

7–9.

Three *Spondylus* shell armrings on the left upper arm. Diam. 9.8×8.6 cm, 8.3×8.6 cm, 7.5×7.5 cm, W. 0.7–1.8cm, 0.4–1.4cm, 0.5–0.9cm (Fig. 6.6.8–10).

10.

Bone ring on a right-hand finger. Th. 0.4cm, diam. 2.5cm (Fig. 6.5.11).

11.

Girdle of 55 cylindrical marble beads with two larger barrel-shaped beads in the middle, around the waist. L. 0.8–1.5cm, diam. 0.9–1.6cm (Fig. 6.12).

12.

Bone tool among the fingers of the left hand. L. 8.4cm, W. 1.1cm (Fig. 6.6.13).

13.

Small cup between the right lower arm and the right pelvic bone. L. 8.6cm, diam. of rim 8.0cm (Fig. 6.6.14).

14.

Eleven tiny *Spondylus* beads around the left foot. L. 0.3–0.4cm, diam. 0.4cm (Fig. 6.6.19).

15.

Lump of red ochre, surrounded by *Spondylus* beads and deer canines, on the left side of skull (Fig. 6.6.16).

The AMS date (VERA-3061) of the grave is 4800–4715 cal BC (68.2 %) ([Table 6.1](#)).

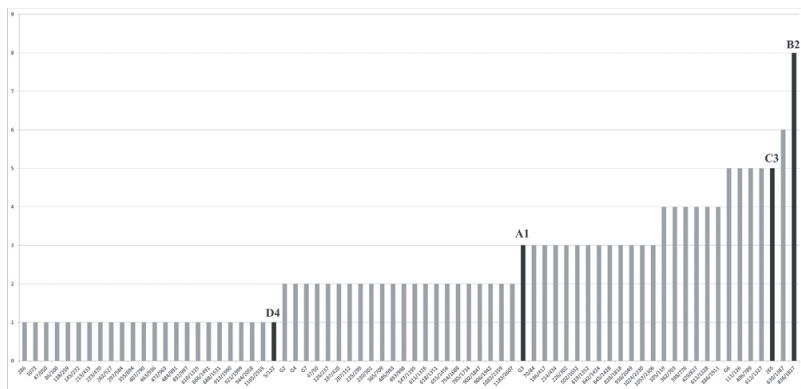


Figure 6.2. Polgár-Csőszhalom. Distribution of 16 grave good types (headdress, necklace, bone ring, bead, red deer canine, Spondylus armring, arm chain, girdle of marble beads, wild boar tusk, wild boar mandible, copper, chipped stone tool, polished stone tool, bone tool, vessel, dog) in burials furnished with various artefacts (burials 1–4 from the four locations are labelled above the columns).

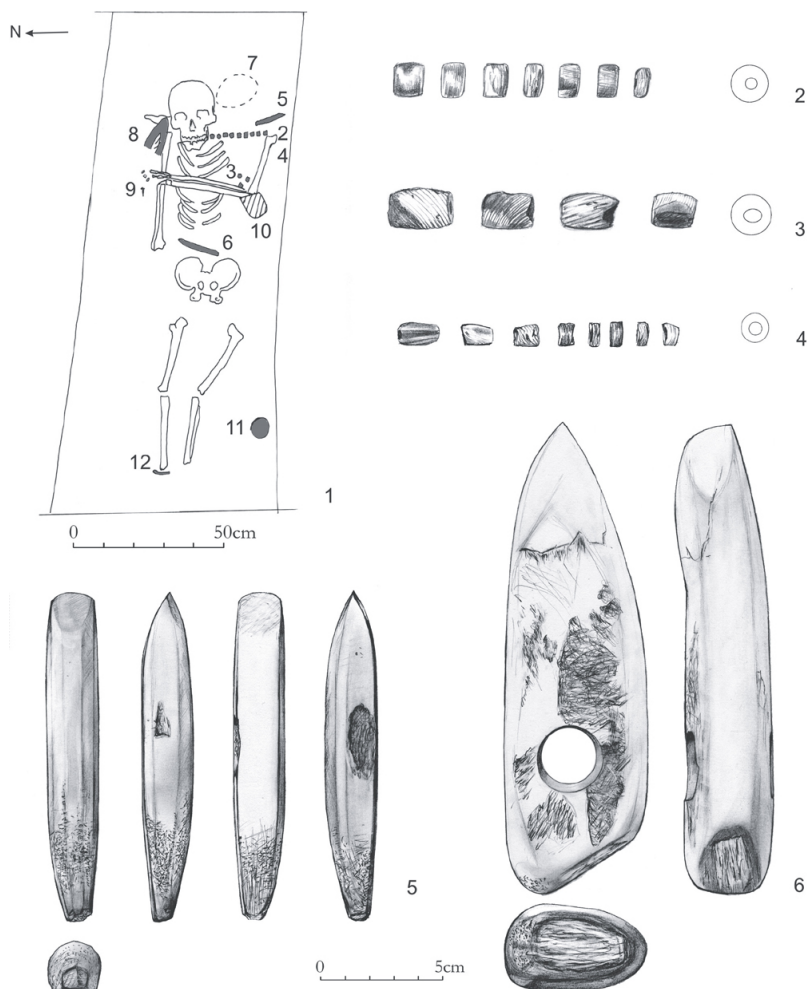


Figure 6.3. Burial 1. Polgár-Csőszhalom, tell settlement – grave 3. 1: drawing of the grave, 2–4: Spondylus beads, 5: stone axe, 6: stone axe, 7: lump of ochre, 8: wild boar mandible, 9: flake, 10: brownish soil, 11–12: pottery sherds.

Burial 3, location C. Grave from the horizontal settlement west of the main tell-enclosure complex: Str. 265

The oblong grave pit was 38cm wide, 170cm long and 100cm

deep. The grave contained the burial of a woman of juvenile age laid to rest on the back in an extended position, with the skull tilted to the right side. The right arm lay extended beside the body, the left lower arm was placed across the pelvis. The legs lay beside each other, the foot bones were in part found resting on each other. The grave was oriented south-east–north-west (Fig. 6.7.1–2) (Anders in prep. a).

Grave goods: Small cup near the right side of the skull.

1.

Biconical vessel with cylindrical neck and long pedestal, decorated with tiny knobs under the rim, on the carination and the tall pedestal, found between the left clavicle and the mandible. L. 34.0cm, diam. of rim 8.8cm, diam. of base 15.4cm (Fig. 6.7.6).

2.

Eleven small *Spondylus* shell beads around the left wrist. L. 0.5–1.0cm, diam. 0.4–0.7cm (Fig. 6.7.4).

3.

Spondylus discs worn thin in centre, found by the left wrist. Diam. 3cm, Th. 1.5cm (Fig. 6.7.5).

4.

Long, unretouched blade made of brown ‘chocolate’ flint, placed under the northern part of the skull. It has a trapezoidal cross-section owing to the two ridges on the dorsal side, parallel to the slightly bent edges. There is no preparation on the butt. L. 9.7cm, W. 1.9cm, Th. 0.6cm (Fig. 6.7.3).

5.

Skeletal remains of a young, roughly 6–8 months-old dog under the woman’s legs on the left side, with an identical orientation as the human burial (Fig. 6.6.1–2). A layer of pottery sherds was found under the dog: the dog’s body had

been laid on the sherds from the clavicle to the middle of the upper leg bone and the skull, too, lay on the sherds (Fig. 6.7.1–2).

The AMS date (VERA-4197) of the grave is 4845–4725 cal BC (68.2 %) ([Table 6.1](#)).



Figure 6.4. Burial 2. Polgár-Csőszhalom, horizontal settlement east of

the tell-enclosure complex. Detail from feature 836/1827.

Burial 4, location D. Grave from the area of the second enclosure south-west of the main tell-enclosure complex: feature 5/122

The oblong grave pit was 60cm wide, 167cm long and 22cm deep. The grave contained the burial of a woman (?) in the adultus age category, slightly crouched on the right side. The burial was oriented south-east–north-west. The skeleton was poorly preserved (Fig. 6.8.1).

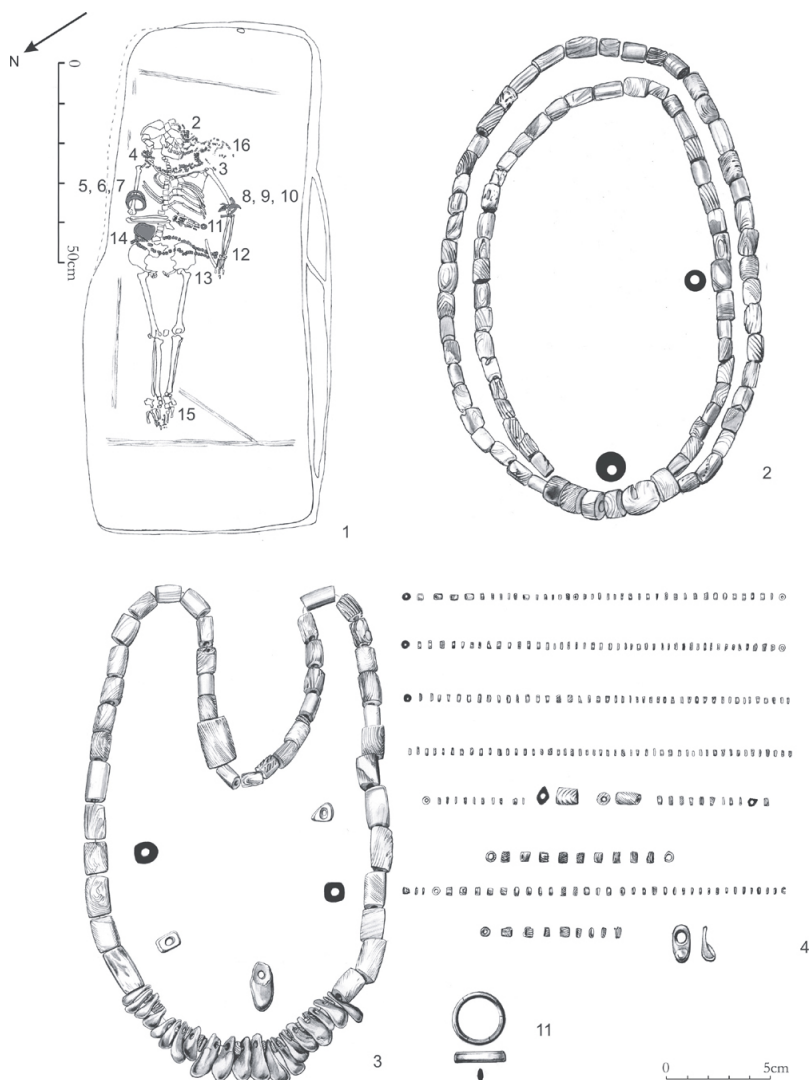


Figure 6.5. Burial 2. Polgár-Csőszhalom, horizontal settlement east of the tell-enclosure complex – feature 836/1827. 1: drawing of the grave, 2: double-strand head-dress, 3–4: necklaces, 11: bone ring.

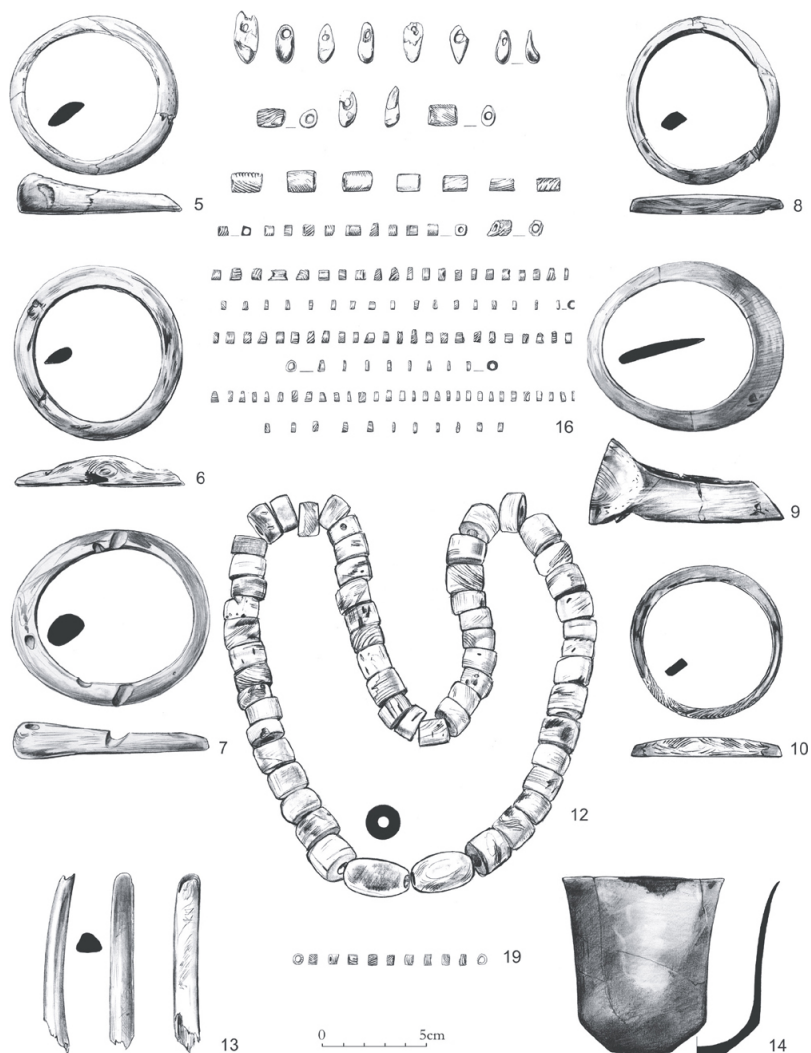


Figure 6.6. Burial 2. Polgár-Csőszhalom, horizontal settlement east of the tell-enclosure complex – feature 836/1827. Grave goods: 5–10: Spondylus armrings, 12: girdle of marble beads, 13: bone tool; 14: cup, 15: Spondylus beads, 16: lump of red ochre, surrounded by Spondylus beads and deer canines.



Figure 6.7. Burial 3. Polgár-Csőszhalom, horizontal settlement west of the main tell-enclosure complex – Str. 265. 1: drawing of the grave, 2: drawing of the grave after the lifting of the human skeleton, 3: chipped stone blade, 4: Spondylus beads, 5: Spondylus disc, 6: pedestalled vessel.

Grave goods:

1.

Small cup near the right side of the skull. L. 6.2cm, diam. of rim 9.2cm (Fig. 6.8.2).

2.

Small jug in the SE corner of the grave pit. L. 11.4cm, diam. of rim 7.6cm (Fig. 6.8.3).

The AMS date (POZ-72989) of the grave is 4785–4695 cal BC (68.2 %) ([Table 6.1](#)).

Discussion

The Polgár burials described above have a relevance for countless archaeological problems. However, the limited framework of this study is inadequate for discussing all possible aspects and we shall therefore focus on a few selected issues.

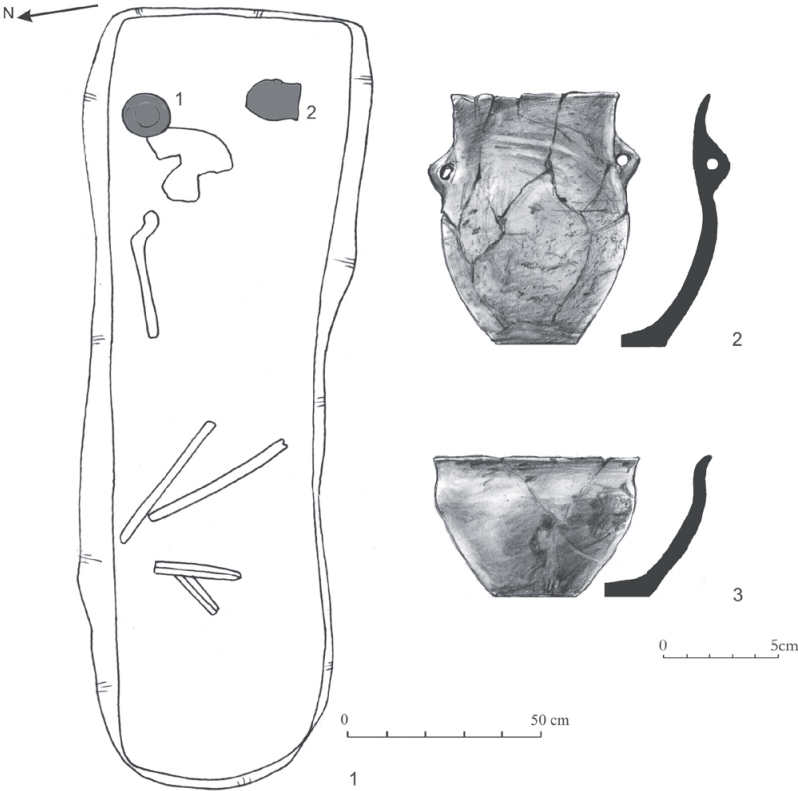


Figure 6.8. Burial 4. Polgár-Csőszhalom, horizontal settlement, area of the second enclosure south-west of the main tell-enclosure complex, feature 5/122. 1: drawing of the grave, 2: vessel, 3: vessel.

Issues of representation

In our earlier studies, we discussed the burials uncovered at Polgár-Csőszhalom with a focus on burial rites (Anders and Nagy 2007, 89–90; Bánffy and Bognár-Kutzián 2007) and on the value estimation of the prestige items deposited in the graves (Raczky and Anders 2008).

We uncovered some 79–80 buildings in the 3.5ha area we investigated in the horizontal settlement. It was occupied for roughly 200–250 years, suggesting a former community of 400–480 persons (assuming five to six persons per household). The 123 burials uncovered among the houses thus represent about 25% of the population in this spatial segment. Extrapolating this data for the entire 34ha of the horizontal settlement would imply some 800 buildings, an overall population of 4000–4800 and an estimated 1000–1200 burials. In this sense, the 123 burials account for no more than 3% of the entire population, which in itself indicates the representative value of the conclusions drawn from these burials.

The AMS dates suggest that the houses in the excavated area of the horizontal settlement at Csőszhalom can be assigned to four phases within the overall occupation span, dated as 4871/4850–4655/4625 cal BC (68.2%) (Anders and Raczky 2013, fig. 5, partly unpublished data). This means that we may assume the simultaneous presence of about 20 houses and a population of 100–120, with each house having a life-span of 50–60 years. Extrapolating this for the entire settlement would mean about 200 contemporaneous houses and a population of 1000–1200. The 123 burials uncovered on the horizontal settlement can be correlated with roughly 30 burials for each house phase in this relative

chronological framework and about 15 burials per generation. These purely statistical figures can be fine-tuned by several factors; for instance, the currently available (but still unpublished) radiocarbon dates indicate that the burials were not deposited at even time intervals, meaning that there were periods with more burials and periods with less in the settlement's currently known segment (Anders in prep. b)

The burials uncovered in the investigated 649m² of the tell enclosed by the innermost burnt enclosure number 21 (7 + 14). Extrapolating this figure for the entire area of the tell, which measures 80m across (5024m²), would mean that we can estimate 162 burials. Considering that the 19 AMS dates indicate an occupation of 375 years (between 4890–4805 and 4740–4665 cal BC (68.2%): Raczky *et al.* 2015, 41), this can be correlated with about seven house generations in the relative time scale of the horizontal settlement. The 21 burials uncovered on the tell's excavated portion and the estimated 162 burials for its entire area account for 0.4–0.5% of the entire population of 4000–4800 calculated for the settlement, i.e. a 3–4% representation, and some 23 burials per house generation. The 'common denominator' of these calculations is the duration of the house generations as a natural measure of time, with which we were able to compare the two *loci* of the site, even though it is our conviction that the two represent fundamentally different types of occupation and are thus essentially unsuitable for comparison.

It is quite clear from the above approximate statistical figures that the burials uncovered at Csőszhalom represent but a fraction of the former Neolithic community. It is also quite certain that the deceased deposited in these burials were selected for interment in the settlement's different spatial segments according to changing criteria and that they thus became unique markers of communal memory through the associated community actions.

Spatial patterns

Graves were found over the entire area of the settlement complex, and thus the burials discussed here come from the tell, the horizontal settlement and the second enclosure system. In other words, the spatiality constructed through the funerary practices was closely allied to the spatiality of the entire settlement and its structural components. The burials did not form larger clusters or a separate formal cemetery, but were part of a macro-context in all locations.

Our analyses indicated that one of the basic principles of spatial organisation on the horizontal settlement was the articulation of spatially distinct household units, perhaps most clearly reflected in the spatial clusters of houses and the associated pits and wells (Anders and Raczky 2013). The burials described above essentially embody the same spatial distribution and the link between the two is accentuated by the identical, north-west to south-east orientation of the houses and the burials. This is an all the more remarkable phenomenon because on the contemporaneous settlement at Kisköre-Gát, also in the Upper Tisza region, the houses were arranged in a single cluster enclosed by a concentric zone of pits (Korek 1989, Abb. 3), while the graves lay in rows, forming larger integrative units (Chapman 2000, 57–73). Together, these expressed a spatial model reflecting a more complex integration in a particular archaeological landscape, similar to the one observed at the Öcsöd-Kováshalom settlement in the Middle Tisza region (Raczky 2009). The settlement where quotidian, domestic activities were performed formed a modular system, which preserved much of the house-pit-grave structure of the preceding ALP period (Domboróczki 2009).

The main principles of spatial organisation on the tell settlement were central symmetry and the four main directions represented by the entrances of the enclosures, which was echoed by the arrangement of the buildings and the diverse orientations of the 21 burials uncovered on the tell.

The built environment of the tell-enclosure structure standing separate from the horizontal settlement, the *locus* of quotidian domestic activities, provided the broader social organisation, the higher-level structural framework and architecture of more uncommon group actions differing from the quotidian community forms. It is our belief that at Csőszhalom we find the same duality of the ritual and social system, as well as their co-evolution into a distinctive European prehistoric environment, as demonstrated by Marcus and Flannery's (2004) case study of Oaxaca. According to this model, community feasting and other ritual activities, which intrinsically determined the material and economic system of daily life and guaranteed their long-term survival, were conducted on the tell settlement at Csőszhalom, an institutionalised location governed by a special set of rules (Gramsch 2015; Hayden and Villeneuve 2011; Raczky *et al.* 2011).

Questions of space and time

Earlier, we assumed that the earliest part of the horizontal settlement lay in the north near the Tisza river and that it gradually expanded southward (Raczky *et al.* 2015, 39–41). However, the radiocarbon dates suggest a less straightforward picture: the former occupants of the 38ha settlement used the space quite dynamically and diversely within this broad spatial framework.

We know that at least two burials fall into the 4845–4725 cal BC time interval (68.2%) (5930 ± 40 BP): one of these is burial 3, location C, mentioned above, the other is one of the graves of the horizontal settlement (location B, grave 5) that contained the burial of a 54–60-year-old man laid on his right side (Table 6.1). While the burial rite of the latter conforms to the practice of the previously excavated burials at Csőszhalom, burial 3 differs substantially from the norm: the deposition of a dog and the chipped stone blade placed beside the head recall the funerary

customs of the Lengyel culture. To this we may add another hint of the complexity of the settlement's use of space: the radiocarbon date for house 10 of the tell settlement (location A) gave a roughly similar time interval: 4955–4805 cal BC (68.2%) (Table 6.1). This clearly shows that various simultaneous events occurred in three different locations lying far from each other.

Similarly, at least four burials can be assigned to the time interval of 4785–4695 cal BC (68.2%) (Table 6.1), three of these (graves 6–8) were found in the northern part of the horizontal settlement's investigated area (location B), while the fourth (burial 4) lay near the freshly identified enclosure (location D), roughly 800m west of the other three (Fig. 6.1).

It is quite certain that various activities with a choreography of diverse dynamics, including funeral ceremonies, were conducted at several isochronous locations within the settlement, suggesting that the broader area of different types of 'common-places' or 'topoi' were transformed into 'special places' and that multiple group identities could have been constructed and negotiated by the participants of community actions in a particular social environment and at a particular moment in time (Lemke 2005).

The relation between the newly discovered enclosure (location 4) and the burial uncovered here (burial 4) raises a spate of additional questions: although the burial lies in the central part of the enclosed area, the available radiocarbon dates nonetheless suggest a finer and a perhaps unrelated use of space: the samples from the two ditches indicated a contemporaneity, while the date for the burial was earlier than the fill of the ditch (inner ditch: 4694–4591 cal BC, outer ditch 4704–4602 cal BC, both 68.2%) (Table 6.1).

The nature, associations and number of objects deposited in the graves

The artefacts deposited in the Csőszhalom burials and their associations, the grave goods (Fig. 6.2), doubtlessly outline a basic interpretative range for the settlement's community and its different identity groups, whereby the expressions of the community's set of values were manipulated from time to time according to certain criteria. We must obviously consider the dual semiotic system imbuing the entire settlement and the interaction of its elements that were embodied by the tell and the enclosure system on the macro level. The artefacts with a wholly different cultural background placed in the funerary context of the deceased could blend several meanings expressed in different 'languages' in a single semantic unit. In our case, code-switching in a funerary context could be a way of special identity construction. In the case of burial 3 (Fig. 6.7), we might be justified in assuming that since dogs were not placed in any other local burial, the presence of such an animal in this particular grave could be a distinctive message transmitted through the 'Lengyel material code', given that dogs are well-documented, even if not too frequently encountered, in the Lengyel burials of Transdanubia (Zalai-Gaál 1994; 2010, 87–98). Likewise, the chipped stone implement placed beside the head is also an unusual grave good in the cultural world of the Tisza region, while it was a general practice in the Lengyel realm (Zalai-Gaál *et al.* 2014).

Table 6.1. The ^{14}C dates from Polgár-Csőszhalom mentioned in the text

ID (in the text)	Lab.-No.	BP	$\pm$	cal BC (1 σ)	Material	Unit	References
Burial 2	VERA-3061	5895	40	4800–4715	human bone	Feature 836/1827	Raczky <i>et al.</i> 2015, tab. 8
Burial 3	VERA-4197	5930	40	4845–4725	human bone	S. 265	unpublished
Burial 4	POZ-72989	5860	40	4785–4695	human bone	Feature 5/172	unpublished
Grave 5	POZ-50327	5930	40	4845–4725	human bone	Feature 921/1999	unpublished
House 10	POZ-47459	6000	50	4955–4805	animal bone	S. 806	Raczky <i>et al.</i> 2015, tab. 9
Grave 6	POZ-50290	5860	40	4785–4695	human bone	Feature 86/100	unpublished
Grave 7	POZ-50294	5860	40	4785–4695	human bone	Feature 213/433	unpublished
Grave 8	POZ-50306	5860	40	4785–4695	human bone	Feature 407/790	unpublished
Inner ditch	POZ-72988	5785	35	4695–4591	animal bone	Feature 2/134	unpublished
Outer ditch	POZ-72987	5790	35	4705–4600	animal bone	Feature 1/125	unpublished

One distinctive trait of the Csőszhalom burials is that pottery, and decorated wares in particular, are extremely rare in the

representational corpus of grave goods: no more than 13 vessels have been recovered from seven burials. We know that pottery did not figure prominently in the late Neolithic burials of eastern Hungary (Siklósi 2013, 190), while pottery was one of the most abundant and diverse artefact types in the burials of the Lengyel culture in Transdanubia (Zalai-Gaál 2010, 72–85). It would therefore appear that burial 4 with its two vessels, no matter how indistinct the pottery itself, did stand out and the adult woman (?) interred in the burial was perhaps a prominent individual. This was possibly a reflection of the link with the special location of the double enclosure. It is also striking that certain painted pottery wares occur abundantly in other social and ritual contexts at Polgár-Csőszhalom, such as wells (Sebők *et al.* 2013) and the area of the tell-enclosure system (Raczky and Sebők 2014).

Thus, it is not only the presence of certain artefacts in the burials, but, conversely, their absence too that conveys important information (Anders and Nagy 2007, 86–87). One such peculiarity is the lack of animal remains in the Csőszhalom burials (save for the single burial containing the dog), while huge amounts of animal bones, the remains of feasting and mnemonic deposition in the area of the tell-enclosure system, have been recovered elsewhere (Raczky *et al.* 2011). The wide range of vessel types and animal remains appearing in individual graves of the Polgár-Basatanya cemetery at the onset of the Copper Age are a clear indication of a paradigm shift in the elaborate system of material display (Bognár-Kutzián 1963). Quite clearly, there was a fundamental transformation in social attitudes to the material world, and the individual environment of the mortuary space became an arena for the expression of broader social relations after the disappearance of the community arena of the tell-enclosure system (Raczky and Anders 2008).

The quantity of objects of representative value

in the graves

The significance of artefacts with a symbolic meaning deposited in the burials could be accentuated by their number and by their expressive ‘weight’. Although polished stone artefacts were typically grave goods of male burials (Anders and Nagy 2007, 86), only the two male burials found on the enclosure-ringed tell contained two polished stone tools (burial 3 and grave 6: Bánffy and Bognár-Kutzián 2007, 197–9, 203–5), which signalled the singular importance of both individuals interred here and of the location itself.

Various adornments made from *Spondylus* are typical and common grave goods of the late Neolithic in the Great Hungarian Plain (Siklósi 2013, 201), and the graves uncovered at Polgár-Csőszhalom are no exception (Anders and Nagy 2007, 86). However, the placement of six *Spondylus* armrings in one burial, as in the case of burial 2, is unusual (Figs 6.4, 6.5.10). Most burials contained one or two armrings, although another female burial of the horizontal settlement yielded four *Spondylus* armrings and one of the graves uncovered at Aszód also contained four armrings (Kalicz 1985, 58). The wearing of armrings reflects a blend of prestige as formulated by the community and of the elements of the deceased’s personal identity. The custom of wearing armrings on the upper arm is documented by their location in burials and by the period’s iconography (Raczky and Anders 2006, 28; Siklósi 2013, 253), and it seems likely that they became part of the costume as well as a distinctive element of self from childhood (Chapman and Gaydarska 2007, 145; D. Hofmann 2015, 9). A meticulous examination of the *Spondylus* articles deposited in the Aeneolithic cemeteries at Varna and Durankulak suggested that *Spondylus* adornments were part of the self-definition of a new elite rising to power around the fifth millennium cal BC in south-east Europe and that they were one of the media for expressing their values (Chapman and Gaydarska 2007, 147–53).

These burials can be regarded as having a special significance

not only because they contain multiple pieces of certain artefacts, but also because all of them (burials 1–3) yielded almost the entire range of the articles generally deposited in male and female burials, and were thus outstandingly rich in this sense, too.

The quantitative particularity of a burial is not simply determined by the number of artefacts deposited in the grave, but also by the size of the grave pit, since the amount of labour invested in digging a large grave pit is greater, giving the burial a higher prestige. The grave pit of burial 2 was much longer, much wider and much deeper than that of the other burials.

Age and gender in the archaeological record

It is hardly mere chance that burial 1 (Fig. 6.3) was located on the tell (location A), while burials 2–3 (Figs 6.4–6.7) were on the horizontal settlement (location B). Our earlier analyses on the settlement's macro-structure concluded that while the 22 graves uncovered on the tell during previous and more recent investigations were male or child burials (15 child burials, five male burials, one incomplete adult laid on the back and one symbolic male burial), the horizontal settlement was dominated by female graves (48 female burials, 33 male burials, 26 child burials, one symbolic burial and 16 burials whose sex was indeterminate). This would suggest that aspects of a particular gender value were ascribed to the differentially structured spatial segments of the local landscape (Bailey 1994, 220–2; Chapman 1997b; Raczky and Anders 2008; Siklósi 2013, 185–7; Tringham 1994).

The depositional contexts of male and female burials on the horizontal settlement at Polgár-Csőszhalom were clearly differentiated according to sex through the placement of the bodies on the right or the left side, as well as through the associations of the accompanying costume articles and other artefacts. The indication of the deceased's sex by body placement was a strictly observed rule even in the case of young children,

reflecting an emphatic expression of gender identity as defined by the community even before puberty. The most typical female costume accessory was the necklace of one or multiple strands of marble beads and armrings ground from *Spondylus* shell. Male burials generally contained smaller polished or chipped stone implements, boar tusk plates or boar mandibles (Raczky and Anders 2006; 2008). A similar regularity can be noted in the materiality of deposition in the case of the burials on the tell (Anders and Nagy 2007, 90–3; Raczky and Anders 2008, 45–9).

This carefully structured gender-specific choreography, permeating the entire settlement and articulated at the personal level too, has not been documented in the late contexts of the preceding period at Polgár-Ferenci-hát, where bodies were uniformly placed on the left side (Whittle *et al.* 2013, 73–8). The period's idiomatic 'genre' of gender representation is embodied by the face pots (Raczky and Anders 2003; 2008). Simultaneously with the appearance of sophisticated gender relations, articulated on several levels on the late Neolithic settlement of Csőszhalom, the different types of face pots virtually disappeared from the ceramic inventory and the number of human depictions also declined. A comparable shift in gender-specific representation could also be demonstrated for the early Copper Age burials of the Basatanya cemetery, dating from around 4500–4400 cal BC, when the graves of a cemetery, a mortuary space separate from the settlement, expressed social gender through arrangement in clusters and elaborate codes (Sofaer Derevenski 1997; 2000).

Specific actions connected with mortuary processes

The microscopic examination and use-wear analysis of the artefacts deposited in the burials allow the mapping of an artefact's biography, its micro-history, which in turn sheds light on the previous activities of the interred. Obviously, one major caveat

is whether the personality preserved in the burial, manipulated as it was by the funerary practices regulated by the community's norms, can be correlated with the genuine personality of the deceased – be that as it may, the micro-histories of the deposited artefacts can provide important clues in this respect.

Burial 1 (Fig. 6.3) and grave 6 of the Csőszhalom tell yielded two stone implements each: three axes and a chisel (Bánffy and Bognár-Kutzián 2007, 203–5), each of which bore traces of hafting and use-wear traces. At the same time, there were no wear marks on the edges and their surface had been re-polished. It would appear that the implements had been re-polished and re-sharpened before their deposition in the burial, obliterating earlier traces of use, and that following this manipulation, a 'new', unused artefact was placed in the grave. We do not know whether this was a general practice in the late Neolithic of the Great Hungarian Plain because use-wear studies of this type have not been performed on similar artefacts; however, there is evidence from other contexts that the stone implements accompanying the deceased had not been used (Zalai-Gaál 2004, 32–3).

The artefacts deposited in burial 3 were treated in an entirely different manner. The stone blade (Fig. 6.7.3) preserved traces of multiple hafting and use, although it remains uncertain what its function had been. This stone implement was not manipulated before the funeral and was deposited together with its complete 'biography'. Similarly, the *Spondylus* adornment (Fig. 6.7.5) worn on the left wrist bore traces of continuous and long-lasting contact with human skin or some other fine fabric. Still, it remains uncertain whether this piece of jewellery had been worn by the living person. Alice Choyke had earlier examined the beads of a necklace made from genuine deer canines and their imitations recovered from another burial of the horizontal settlement; she found that the beads bore different traces of wear, suggesting that some of the necklace's beads had probably been made during the deceased's lifetime, while others had been taken from other

necklaces or were newly made at the time of the funeral (Choyke 2001).

Conclusion

As noted above, many questions continue to remain unanswered and the interpretation of the burials is constrained by several theoretical considerations. It is unclear whether the burials found on settlements represent the 'regular' or 'irregular' category in that particular cultural context (Müller-Scheeßel 2013) and the relationship between the burnt houses representing ritual community buildings on the enclosure-ringed tell and the quotidian, domestic household units of the horizontal settlement also remains enigmatic. Can we assume that persons who were not members of the local Csőszhalom community had participated in the ritual and social activities conducted on the tell, a supra-regional centre, perhaps a centre of congregation (Renfrew 2013) or a gathering place (Parker Pearson *et al.* 2008, 161)? Were the people interred on the tell all members of the local Polgár community? These questions are an indication of the many uncertainties in the representational value of the Csőszhalom burials and of the countless dimensions of the interpretative approaches needed for addressing these issues. Still, the greatest theoretical problem is the relation between the mortuary space of the Polgár burials and the social structures of the community occupying the site. Regarding the spaces of prehistoric settlements, the question of whether there was a correspondence or non-correspondence between them is highly relevant, for it touches upon the relation between the physical space of a prehistoric settlement and the social spaces of the groups occupying the settlement, as defined by B. Hillier and J. Hanson (1984) (i.e. the relation between spatial groups and label-sharing groups: Ebersbach 2010, Abb. 5). Another important issue is whether there were changes in the original relationships and, if so, what they

were.

The archaeological examples cited here suggest that the individuals interred in the burials we have described fulfilled a prominent role in one particular aspect of the community's social relationships. The communal negotiation of various identities was expressed through the spatial location of the graves, the choice of artefact categories deposited in them, as well as by their number. This act of re-presentation can be seen as the community's negotiation of an individual's multi-dimensional 'image'. The 'image' chosen for presentation was a mental construct incorporating elements ranging from the deceased, the narrower area of the burial and the segments of the horizontal settlement where domestic activities were conducted, through the areas ringed by the enclosures and the micro-region of Polgár Island to cosmic dimensions, which today would be labelled a cosmo-vision (Ashmore 2015). Human interactions in this sophisticated system were simultaneously characterised by the hierarchy of networks and supra-hierarchical formations. It seems to us that this distinctively complex relation is most clearly embodied by the horizontal plane of the single-layer settlement and the vertical accumulation of layers of the tell settlement. Transposing this duality into the dimension of temporality, we may say that the burials of the horizontal settlement represent certain individuals of the population at the scale of quotidian temporality, while the individuals interred on the tell were set into an interpretative framework on another scale, namely the long-term temporality of the tell settlement. The visibility of this social system is characterised by the lack of archaeological evidence about most of the site's occupants, while some were set in the quotidian dimension and others were represented at a long-term (perhaps cyclically recurring and eternal) temporal scale.

Different archaeological case studies offer a more or less similar picture of the immense diversity in the disposal of the dead in prehistoric Europe and of the 'visibility' of the deceased in the

archaeological record (Aspöck 2013; Bradbury *et al.* 2015). Currently, we may say that we witness the emergence of new behaviour types in several regions of south-east Europe in the earlier fifth millennium cal BC as part of what has been labelled the ‘Varna effect’, one aspect of which appears in the mortuary domain. In this context, the accumulation of prestige exotica in richly furnished graves was designed to make visible and accentuate the individuals who were no doubt members of the elite (Chapman 2013). The emphasis on making new, formative social structures visible was translated into very different ‘material languages’ within each region (Hansen 2013, 141–4). The graves from various spatial segments of Polgár-Csőszhalom reflect the same colourful ‘diversity within uniformity’ (Whittle 2012, 201) in how new identities were negotiated and expressed at the macro-level of the Tisza region.

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Note

1

The size estimate of the site is based on the geophysical survey made in 2013.

The new surveys extended its dimension for 65.8ha in 2016 (Füzesi *et al.* 2016).

2

The description of the grave is based on Ida Bognár-Kutzián's field diary, the inventory book in the Hungarian National Museum and the published report of the excavation (Bánffy and Bognár-Kutzián 2007, 197–9, 203–5, 216–7); however, the data recorded in these sources are occasionally at variance with each other. The human skeletal remains uncovered during this excavation season were not initially submitted to an anthropological examination.

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A tale of two processes of Neolithisation: south-east Europe and Britain/Ireland

Rick Schulting and Dušan Borić

Introduction

1996 saw the publication of Alasdair Whittle's *Europe in the Neolithic: the creation of new worlds* – a landmark event for European Neolithic studies. Alasdair's previous publication *Neolithic Europe: a survey* (1985) already had provided at the time one of the best, most comprehensive and accurate surveys of the vast amount of data coming from thousands of Neolithic as well as Copper Age sites from across the continent. But the 1996 synthesis not only provided updates of research appearing in the intervening years, but also opened up new conceptual horizons, strongly arguing for the importance of a successful marriage between empirical detail and theoretical issues. This is best reflected in the

memorable phrase: 'Interpretation is unavoidable, central, obligatory' (Whittle 1996, preface).

Europe in the Neolithic programmatically challenged some taken-for-granted views of the Neolithic that had remained ingrained and rarely systematically scrutinised since the days of Gordon Childe. What was the role of indigenous populations of foragers in the transition to agriculture or the Neolithic way of life? Was the change towards the Neolithic caused by migrating populations of farmers who in successive waves replaced sparse forager populations, as maintained by most authors until this point, or should one envisage more complex processes of acculturation and interaction between different groups? How different were the identities of Mesolithic and Neolithic communities? To what extent were Neolithic farming populations fully sedentary, as assumed by many, even in the context of large tell sites, and what importance did seasonal mobility play for Neolithic people? These are only some of the questions posed in the volume. Twenty years on, much has changed, both in the vastly increased amounts of material recovered, but perhaps more importantly in the remarkable advances in archaeological science that have brought much new information to bear on questions concerning the process by which communities became 'Neolithic' in Europe, as witnessed by a series of conferences dedicated to this field and their resulting publications; again, Alasdair is at the forefront of this new research (e.g., Whittle and Bickle 2014; Whittle *et al.* 2011). In this paper we look at the process of Neolithisation by examining the patterning of stable isotope data in the Mesolithic–Neolithic transition from two ends of the continent: south-east and north-west Europe. The accounts we can provide based on the current evidence reveal some differences, but also many similarities. The comparative perspective may offer some benefit to our understanding of wider processes while we keep an eye on the detail at regional and site levels – an important lesson we both learned from Alasdair.

Two processes of Neolithisation

By ‘bookending’ Europe we can compare the process of Neolithisation in two very different environmental and cultural/historical contexts (Fig. 7.1). South-east Europe sees the earliest appearance of domesticated plants and animals, alongside changes in material culture, in continental Europe. Britain and Ireland, by contrast, fall near the end of the process, being among the last regions to ‘become Neolithic’ (the only later transition occurs in the far north and east of Europe). By this stage any adaptations to the very different climate of Europe – compared to that found with the origins of domesticated plants and animals in the Near East – will have already taken place, both in terms of genetic and physiological changes to the resources themselves (e.g. Jones *et al.* 2012), and, equally importantly, in terms of the ‘know-how’ required to manage crops and herds successfully. Britain and Ireland also differ in that plants and animals (at the very least) must have been carried across the sea, with the potential for a more directed introduction. In both regions, the question of exactly who was doing the introducing remains, along with ‘how’ and ‘why’.

Here, we explore some aspects of these questions (also occasionally touching upon ‘who’) through the use of stable isotope analysis, which is relatively well established in both geographical areas, such that relatively large datasets are available. The data are of varying quality: while the majority are the averages of duplicate or triplicate isotopic measurements specifically for palaeodietary investigation, a minority are single runs associated with ^{14}C AMS dating, generally from the Oxford Radiocarbon Accelerator Unit, University of Oxford. These are retained here, since direct dating provides good chronological control, and studies (e.g. Schulting *et al.* 2014) have shown sufficiently good agreement between the two types of measurements for the broad approach being undertaken here. As a means of graphically organising the data for discussion, we divide

stable carbon and nitrogen isotope values obtained on human bone and dentine collagen into four quadrants, using a $\delta^{13}\text{C}$ value of -18‰ on the x-axis and a $\delta^{15}\text{N}$ value of $+12\text{‰}$ on the y-axis (Schulting 2015a). The upper right quadrant (URQ) reflects varying reliance on marine-derived protein (isotopic values on collagen are biased towards the protein component of the diet), while the upper left quadrant (ULQ) is expected to reflect the use of freshwater aquatic resources, which are enriched in ^{15}N but usually depleted in ^{13}C . The lower left quadrant (LLQ) reflects diets with predominantly C_3 terrestrial plant and animal resources, while the lower right quadrant (LRQ) is expected to be largely unpopulated in ecosystems lacking substantial C_4 resources. Of course this approach masks considerable isotopic/dietary variability within each quadrant, but it does offer a convenient means of structuring and comparing data from different sites and periods in the search for broad trends, as well as providing a simple means of highlighting outliers for further consideration.



Figure 7.1. Map showing locations of key sites mentioned in the text.

South-east Europe

The transition to a farming way of life is one of the most debated topics in European, and indeed world, prehistory. South-east Europe and the Balkans (Fig. 7.1) have for a very long time been recognised as key in understanding the initial dispersal of Neolithic ways of living into and across Europe and in devising models that can also be applied to other regions of Eurasia (e.g. Özdoğan 2011; Robb 2013; Tringham 2000; Whittle 1996; and papers in Lichter 2005; Price 2000). What has been less agreed upon is whether one should envisage a phased (frontier model), slow (diffusionist model) or fast (migrationist model) spread,

conversion of local populations with the arrival of the Neolithic novelties (acculturation model), or a rapid spread of pioneer farmers (leap-frogging model), forming enclaves in particularly favourable parts of the wider region (for various versions of existing models see Ammerman and Cavalli-Sforza 1973; Biagi *et al.* 2005; Borić 2005; Forenbaher and Miracle 2005; Gkiasta *et al.* 2003; van Andel and Runnels 1995; Whittle *et al.* 2002). Providing complex answers to possibly very complex realities and patterns that the listed possibilities may suggest will depend largely on what the chronology of the Neolithic spread suggests both at sub-regional and pan-regional scales.

The database

At present, we are still lacking datasets that would easily discriminate between the above possibilities. Various targeted dating projects in the past were reasonably successful in providing answers about the pace and directionality of the Neolithic spread in the Balkans (e.g. Forenbaher and Miracle 2005; Krauß *et al.* 2014; Whittle *et al.* 2002). However, often such patterns depend on a single early date from a particular site within a highly selective sample of dated sites and contexts. For instance, on the basis of a handful of single measurements per site, Biagi *et al.* (2005) suggest that early Neolithic enclaves were formed in the northern parts of south-east Europe, thus indicating rapid Neolithic insertion in certain parts of the region. Yet, early Neolithic dates previously obtained in the central Balkans hint at a more gradual spread.

Apart from insights that the chronology of the Neolithic spread provides, in the past two decades stable isotope data on human bone have provided an important proxy for the characterisation of the Neolithisation process. The skeletal record of the Danube Gorges, with its large burial sample in excess of 500 individuals encompassing the Mesolithic and Neolithic periods,

saw the first application of stable isotope analysis (Bonsall *et al.* 1997), and it continues to play a decisive role in our understanding of changes in the subsistence base of Mesolithic foragers versus Neolithic farmers in south-east Europe. Other areas of the region offer a far patchier stable isotope record of human diets. Yet, data have accumulated with which to attempt to characterise and compare the subsistence base of Mesolithic and Neolithic communities in different parts of south-east Europe. The coverage is still sporadic and should improve in the future, even though the absence of human remains in some areas is an obstacle given the lack of new discoveries.

Regional trends in the material

Here, the approach is to look at both the broad-scale, pan-regional patterns and to zoom in on specificities of particular sequences. Existing stable isotope data on human bones are organised with a mixed set of criteria: according to their location, geographic affordances (coastal/inland/riparian), temporal slices (Mesolithic, Mesolithic–Neolithic transition and early Neolithic) and exceptionally, in the case of the Danube Gorges sequence where a large number of stable isotope data are available, neonates are separated from older individuals. Hence, the existing dataset (Table 7.1) is organised into the following groups marked by different symbols: eastern Adriatic coastal zone Mesolithic ($n = 6$), eastern Adriatic coastal early Neolithic ($n = 9$), Greece coastal early/middle Neolithic (Franchthi, $n = 11$), Greece inland Mesolithic (Theopetra, $n = 1$), Greece inland early/middle Neolithic (Theopetra, $n = 11$), south-east European inland Mesolithic ($n = 2$), south-east European inland early Neolithic ($n = 36$), the Danube Gorges early to late Mesolithic ($n = 129$), the Danube Gorges Mesolithic–Neolithic transition phase ($n = 37$), the Danube Gorges Mesolithic–Neolithic transition phase neonates ($n = 14$) and the Danube Gorges early Neolithic ($n = 31$). In

total, carbon and nitrogen isotope values of 287 individuals from across south-east Europe are available (Fig. 7.2).

Table 7.1. Mesolithic and early/middle Neolithic human stable isotope values in south-east Europe.

Site	Country	Location	Period	$\delta^{13}\text{C}$ (‰)	$\pm$	$\delta^{15}\text{N}$ (‰)	$\pm$	n	Comments	Source of data
Vela Spila	Croatia	coastal	Meso	-18.6	0.6	9.2	1.0	4	one infant with $\delta^{13}\text{C} = -17.9\text{‰}$; $\delta^{15}\text{N} = 10.7\text{‰}$	Lightfoot <i>et al.</i> 2011
Pupićina	Croatia	coastal	Meso	-19.2	0.1	10.5	0.3	2		Lightfoot <i>et al.</i> 2011
Vela Spila	Croatia	coastal	E/M Neo	-20.4	—	9.2	—	1	infant	Lightfoot <i>et al.</i> 2011
Crno Vriilo	Croatia	coastal	E/M Neo	-20.1	—	9.6	—	1		Lightfoot <i>et al.</i> 2011
Kargadur	Croatia	coastal	E/M Neo	-19.6	0.5	10.1	0.2	3		Lightfoot <i>et al.</i> 2011
Pupićina	Croatia	coastal	E/M Neo	-20.1	0.1	8.9	0.1	3		Lightfoot <i>et al.</i> 2011
Vela Spilja-Lošinj	Croatia	coastal	E/M Neo	-18.9	—	12.0	—	1		Lightfoot <i>et al.</i> 2011
Franchthi	Greece	coastal	E/M Neo	-18.7	0.8	9.2	1.9	11		Papathanasiou 2011
Theopetra	Greece	coastal	Meso	-20.4	—	7.8	—	1		Papathanasiou 2011
Theopetra	Greece	coastal	E. Neo	-20.0	0.4	7.6	0.6	11		Papathanasiou 2011
Maroslele Pana	Hungary	inland	I. Meso	-22.4	—	11.5	—	1		Whittle <i>et al.</i> 2002
Topole-Bač	Serbia	inland	I. Meso	-19.9	—	8.6	—	1		Whittle <i>et al.</i> 2002
Topole-Bač	Serbia	inland	E/M Neo	-19.7	—	8.8	—	1		Whittle <i>et al.</i> 2002
Maroslele Pana	Hungary	inland	E/M Neo	-20.9	0.4	9.7	0.8	3		Whittle <i>et al.</i> 2002
Endrőd Varnatany	Hungary	inland	E/M Neo	-19.8	—	8.7	—	1		Whittle <i>et al.</i> 2002
Szarvas 23	Hungary	inland	E/M Neo	-20.1	—	8.1	—	1		Whittle <i>et al.</i> 2002
Deszk	Hungary	inland	E/M Neo	-19.5	0.6	9.1	0.5	2		Whittle <i>et al.</i> 2002
Szolnok-Szanda	Hungary	inland	E/M Neo	-19.5	0.4	9.7	0.4	5		Oross and Siklósi 2012; unpublished
Starčevo-Grad	Serbia	riverine	E/M Neo	-20.2	0.1	9.3	0.3	2		Whittle <i>et al.</i> 2002
Perlez-Batka C	Serbia	inland	E/M Neo	-19.9	—	9.2	—	1		Whittle <i>et al.</i> 2002
Golokut-Vizić	Serbia	inland	E/M Neo	-19.9	—	7.4	—	1		Whittle <i>et al.</i> 2002
Blagotin	Serbia	inland	E. Neo	-19.3	—	9.7	—	1	infant	Whittle <i>et al.</i> 2002
Vinča-Belo Brdo	Serbia	riverine	E/M Neo	-20.5	0.5	11.8	1.1	6		Borić 2009; Nehlich <i>et al.</i> 2010
Jaričište 1	Serbia	inland	E/M Neo	-20.4	0	10.2	0.2	2		Stefanović and Porčić 2015; unpublished
Belišće St Valpovo	Croatia	inland	E/M Neo	-20.7	0.2	10.2	0.4	4		Lightfoot <i>et al.</i> 2011
Vukovar-Gimnazija	Croatia	riverine	E/M Neo	-19.9	0.4	10.7	1.9	2	one infant with $\delta^{15}\text{N} = 14.1\text{‰}$	Lightfoot <i>et al.</i> 2011
Ajmana	Serbia	riverine	E. Neo	-20.0	0	10.3	0.4	2		Borić and Price 2013
Lepenski Vir III	Serbia	riverine	E. Neo	-19.4	0.8	12.6	1.9	22		Borić <i>et al.</i> 1997; 2015a; Borić <i>et al.</i> 2004; Borić and Price 2013; Nehlich <i>et al.</i> 2010
Cuina Turcului	Romania	riverine	E. Neo	-19.4	—	13.9	—	1	child	Bonsall <i>et al.</i> 2015a
Velesnica	Serbia	riverine	E. Neo	-19.4	0.2	10.5	0.7	6		Bonsall <i>et al.</i> 2015a
Lepenski Vir I-II	Serbia	riverine	Transition	-19.4	0.8	13.7	2.4	40	children, adolescents and adults	Bonsall <i>et al.</i> 1997; 2015a; Borić <i>et al.</i> 2004; Borić and Price 2013; Nehlich <i>et al.</i> 2010
Lepenski Vir I-II	Serbia	riverine	Transition	-19.4	0.6	15.8	0.9	13	infants only	Borić <i>et al.</i> 2004
Cuina Turcului	Romania	riverine	Transition	-19.4	—	13.9	—	1	infant	
Icoana	Serbia	riverine	Transition	-19.4	0.1	16.0	0.1	2		Bonsall <i>et al.</i> 2015a
Hajdučka Vodenica	Serbia	riverine	Transition	-18.9	1.0	16.1	0.3	4		Borić 2011; Borić and Price 2013
Padina	Serbia	riverine	Transition	-19.5	0.4	15.6	1.2	3		Borić 2011; Borić and Price 2013
Vlasac	Serbia	riverine	Transition	-17.7	—	17.0	—	1		Borić <i>et al.</i> 2014
Lepenski Vir (proto-IV)	Serbia	riverine	E. Meso	-19.5	0.5	14.4	0.9	9		Bonsall <i>et al.</i> 1997; 2015a; Borić <i>et al.</i> 2004; Borić and Price 2013; Nehlich <i>et al.</i> 2010
Cuina Turcului	Romania	riverine	I. Meso	-19.4	0.1	15.2	0	2		Bonsall <i>et al.</i> 2015a
Velesnica	Serbia	riverine	E. Meso	-19.3	—	14.7	—	1	infant	Bonsall <i>et al.</i> 2015a
Hajdučka Vodenica	Serbia	riverine	I. Meso	-19.5	0.8	15.7	0.7	10		Borić 2011; Borić and Price 2013; Nehlich <i>et al.</i> 2010
Padina	Serbia	riverine	E/L. Meso	-20.0	0.9	14.5	1.2	17		Borić 2011; Borić and Price 2013; Nehlich <i>et al.</i> 2010
Schela Cladovei	Romania	riverine	I. Meso	-19.3	0.5	15.1	0.8	13		Bonsall <i>et al.</i> 1997; 2015a
Vlasac	Serbia	riverine	E/L. Meso	-19.5	0.7	14.7	1.3	77	infants, children, adolescents and adults	Bonsall <i>et al.</i> 1997; Borić <i>et al.</i> 2014; Borić and Price 2013; Nehlich <i>et al.</i> 2010

There are two distinct groupings at the pan-regional scale, with most individuals falling either into the upper or lower left quadrants. This is consistent with the expected distribution of diets dominated by freshwater fish throughout the Mesolithic of the Danube Gorges and largely terrestrial diets in the early Neolithic of the inland regions of south-east Europe, respectively. What is less expected is that, based on stable isotope data alone, during the Mesolithic of the coastal eastern Adriatic region (within 10km of the coastline) dietary practices were dominated by terrestrial resources, presumably hunted game, with only one (infant) individual from Vela Spila Cave on the island of Korčula falling into the expected diet of coastal areas with a higher contribution of marine resources. Yet the obtained dietary signature of the infant presumably at least partly reflects its mother's diet via nursing. There are several other Mesolithic individuals who are close to the -18.0‰ cut-off value in the LLQ of the scatterplot, and this may indicate limited consumption of marine-derived foods. In keeping with the pattern seen in the Mesolithic of this region, analysed human samples from Neolithic coastal sites in the eastern Adriatic region suggest that diets were largely terrestrial (Lightfoot *et al.* 2011), and it can be assumed that domesticates might have started to play an important role in subsistence (e.g. McClure 2013). One should note that current conclusions about Mesolithic–Neolithic dietary pathways for this region are based on a relatively small sample of analysed individuals that may or may not be representative of underlying patterns, and it would be important to take into consideration the significant presence of fish remains in faunal assemblages of both Mesolithic (Vela Spila) and Neolithic (Vela Spila Korčula, Kargadur, Vela Špilja Lošinj) sites (cf. Rainsford *et al.* 2014).

A possibly similar pattern of predominantly terrestrial diets at coastal sites has been noted as the Mediterranean basin-wide trend in the Mesolithic (Schulting 2015a, 161 and references therein) and may also have characterised coastal Greece. With analysis

currently under way, this picture may change once isotopic data become available for the Mesolithic human remains from the important coastal site of Franchthi Cave (M. Richards *pers. comm.*). A number of individuals with stable isotope data assigned to Neolithic levels of Franchthi Cave indicate largely terrestrial diets, with one individual in the URQ of the scatterplot with a $\delta^{13}\text{C}$ value of -17.0‰ and a $\delta^{15}\text{N}$ value of 14.1‰ suggesting a moderate intake of marine resources (Papathanasiou 2011, 93, tab. 5.1). One other individual is at a lower trophic level, in the LRQ, with a $\delta^{13}\text{C}$ value of -17.8‰ still probably indicative of some marine contribution to his/her diet. Similar to the Adriatic coastal zone, a number of stable isotope measurements at Neolithic Franchthi do tend to cluster closer to -18.0‰ , which may suggest some minor and sporadic contribution of marine foods. Regarding inland Mesolithic Greece, currently there is only one isotopically analysed individual from the site of Theopetra Cave who, as might well be expected, points to a primarily terrestrial diet and is indistinguishable from the tightly clustered Neolithic values. Both suggest terrestrial C_3 dietary pathways, with a likely importance of domestic plants and animals in the latter case (Papathanasiou 2011).

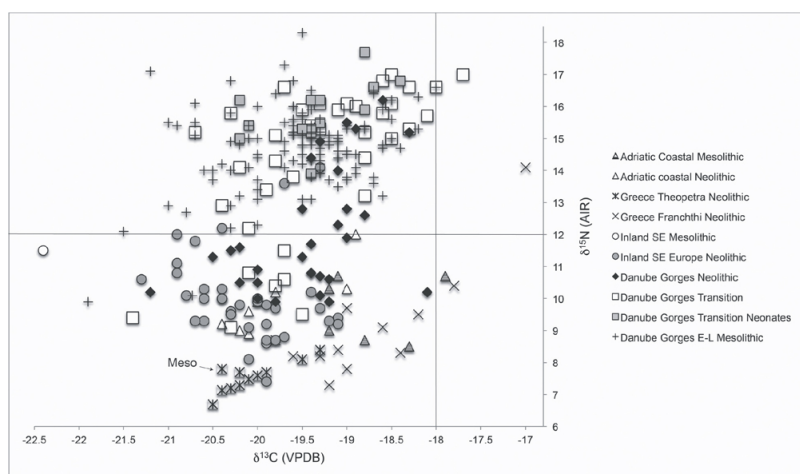


Figure 7.2. Plot of $\delta^{13}\text{C}$ and $\delta^{15}\text{N}$ values on Mesolithic and early/

middle Neolithic human bone collagen from south-east Europe (n = 287) (sources: [Table 7.1](#)).

Chronological trends in the material

To date, there are only two individuals directly dated to the Mesolithic in inland south-east Europe, both from the Carpathian basin. One is a human skull associated with the early Neolithic occupation at Maroslele-Pana in Hungary with two determinations (OxA-9403: 7765 ± 55 BP; OxA-X-922-30: 7680 ± 70 BP) clearly confirming a late Mesolithic assignment in the first half of the seventh millennium cal BC (Borić 2005; Whittle *et al.* 2002; 2005). The associated stable isotope values fall in the LLQ, although the slightly elevated $\delta^{15}\text{N}$ value of 11.5‰ could be indicative of some consumption of freshwater fish at this locale close to the banks of the Maros River. The interpretation of the context of this discovery remains uncertain, with the presence of a Mesolithic-age skull in early Neolithic occupation levels with other Neolithic individuals at the site dated to the beginning of the sixth millennium BC. Two possibilities can be mentioned: (a) the Mesolithic-age skull was deposited here in the late Mesolithic and accidentally disturbed during the early Neolithic occupation of the site, or (b) these remains were intentionally brought to this location by early Neolithic groups as possible human relics from some other region.

The second Mesolithic individual comes from Topole-Bač in Serbia. As one of two AMS-dated individuals in a double burial, it is dated to the end of the eighth and the beginning of the seventh millennium cal BC (OxA-8504: 8085 ± 55 BP). This result is surprising as the other individual is also directly AMS-dated, but to the end of the seventh millennium cal BC, suggesting an early Neolithic burial context. Both burials are articulated primary inhumations placed in crouched positions on their right sides symmetrically back-to-back, which strongly suggests the contemporaneity or at least close awareness of the two interments

(Borić 2015a). The stable isotope results for both individuals suggest reliance on terrestrial C₃ pathways despite the proximity of the site to the banks of the Danube River, so it is unlikely that a freshwater reservoir effect can explain the discrepancy in the dates. In order to be able to accept that the AMS measurement and isotope values for the individual from Topole-Bač are indicative of Mesolithic dietary patterns, it will be necessary to re-date these burials.

Most of the inland south-east European Neolithic sites with AMS dates and associated stable isotope data come from the Carpathian basin of Hungary, Serbia and Croatia, with the exception of Jaričište in western Serbia and Blagotin in central Serbia. At each of these sites only a small number of primary burials were found, with crouched inhumations placed on their right or left sides being the norm (Borić 2015a). Despite the fact that most sites in the Carpathian basin are found close to the major waterways of the Danube, Sava, Tisza, Maros and Körös Rivers, a consistent pattern of largely terrestrial diets emerges for the earliest Neolithic inhabitants of the region, and this pattern by and large matches the consistent presence of predominantly domestic (ovicaprid-dominated) taxa in early Neolithic faunal assemblages across the region (see Orton 2012 for a review). An elevated $\delta^{15}\text{N}$ value of 14.1‰ from Vukovar-Gimnazija in Croatia (Lightfoot *et al.* 2011) obtained on an infant presumably reflects a nursing signal that contributes to ^{15}N enrichment due to recycled nitrogen, enriching breastfeeding babies by one trophic level (with a mean value of between 2 and 4) relative to the mother. If, by contrast, a neonate died during birth, its $\delta^{15}\text{N}$ value would reflect that of the mother (cf. Dittman and Grupe 2000).

Elevated $\delta^{15}\text{N}$ values are also present in several individuals from a multiple burial found at the lowermost levels at the Vinča-Belo Brdo tell, located on the Danube banks near Belgrade. One is dated to the mid-sixth millennium cal BC and it is assumed that other individuals fall within the same timespan. At Vinča, the

$\delta^{15}\text{N}$ values alone would suggest some consumption of high-trophic-level foods, presumably fish from the nearby river. However, sulphur isotope ($\delta^{34}\text{S}$) analysis of five individuals from this multiple burial indicates that this conclusion may need revisiting. It may be that $\delta^{34}\text{S}$ is more sensitive to the relative role of freshwater fish in dietary protein (cf. Privat *et al.* 2007; see below). Nehlich *et al.* (2010) suggest that the $\delta^{34}\text{S}$ values at Vinča, which range between 2.3–3.7‰, are indicative of largely terrestrial diets (Tasić *et al.* 2016). This also implies no need for any correction of the radiocarbon dates for the freshwater reservoir effect (Borić 2015b, footnote 98). On the basis of a larger sample of $\delta^{34}\text{S}$ measurements on human and animal remains from sites in the Danube Gorges area (see below), Nehlich *et al.* (2010, 1136) conclude that $\delta^{34}\text{S}$ values below 6‰ reflect primarily terrestrial sources, but there remains a need to reconstruct locally available $\delta^{34}\text{S}$ values by analysing faunal remains from Vinča. If fish played a minor role in the diet of individuals from Vinča, what explains the elevated $\delta^{15}\text{N}$ values? We may speculate that in this context manuring has caused enriched ^{15}N levels (Bogaard *et al.* 2013), and this possibility should be taken into account, along with the contribution made by young domestic animals with elevated $\delta^{15}\text{N}$ values due to nursing (Nehlich and Borić 2015; Nehlich *et al.* 2010).

The Mesolithic–Neolithic transition and the role of fish

The micro-region of the Danube Gorges has seen several dedicated stable isotope projects and also provides the most representative and temporally differentiated and fine-grained sample in south-east Europe with which to observe changes in dietary regimes in the transition from the Mesolithic to the Neolithic. A suite of isotopic analyses (^{13}C , ^{15}N , ^{34}S , $^{87}\text{Sr}/^{86}\text{Sr}$) have been applied to skeletal material from various sites (Bonsall *et al.* 1997; 2000;

2015a; Borić and Price 2013; Borić *et al.* 2004; Cook *et al.* 2009; Grupe *et al.* 2003; Nehlich *et al.* 2010). The obvious research advantage here is that a large number of human remains is available for analysis along with a relatively consistent temporal coverage of the Mesolithic and early Neolithic periods. However, it should be noted that early Neolithic human remains are less abundant than late Mesolithic remains. There are now close to 300 AMS measurements from almost all of the sites dating to the discussed periods, with many on human remains (Bonsall *et al.* 2015a; Borić 2011). Various features and burials from Lepenski Vir have now been dated by over 100 radiocarbon measurements (Borić *et al.* 2016). Stable isotope analyses in conjunction with AMS dating were also key in recognizing the aquatic reservoir effect that affects radiocarbon dates on humans, dogs or fish, or any organisms that feed on fish. This is due to the intake of carbon from a reservoir different than the atmosphere, thus causing the deposition of 'old carbon', with the necessity of calculating age offsets (Cook *et al.* 2002; cf. Borić 2011; Borić and Miracle 2004). Hence the region plays an important role in gaining a better handle on various methodological issues, in part due to the unique and robust sample.

Most of the individuals grouped under early to late Mesolithic Danube Gorges, which in this regional context encompasses the period from the beginning of the Holocene to the first appearance of Neolithic settlement in the central Balkans around 6200 cal BC, are found in the ULQ, suggesting a substantial contribution of freshwater resources to their diet (Fig. 7.3). While a finer-grained temporal resolution is possible by differentiating early from late Mesolithic groups regarding the pattern of stable isotope data, this is unnecessary for the discussion here, which primarily focuses on the Neolithisation process. It suffices to say that only two Mesolithic individuals – both from Vlasac – have values below 12.0‰: a 10–12-year-old child (burial 51, $\delta^{15}\text{N} = 9.9\text{‰}$) and a 6-year-old child found with an adult (burial 66a, $\delta^{15}\text{N} = 10.1\text{‰}$)

(Borić *et al.* 2004). Both burials were found in the context of the late Mesolithic layers at Vlasac (Borić *et al.* 2008), but neither has been directly AMS-dated. It is noteworthy that both skeletons exhibit flexed lower limbs, often indicative of later, crouched Neolithic body postures. However, early Mesolithic individuals at the sites of Padina and Lepenski Vir also have positions with lightly flexed lower limbs, so until direct AMS dates are obtained on these two individuals it will remain uncertain how to interpret their outlier stable isotope values. One individual from Hajdučka Vodenica (burial 19/20) borders on the URQ, which would suggest the consumption of marine-derived resources, and this can be explained by the contribution of migratory sturgeon (likely beluga *Huso huso*) to their diet, since various species of sturgeon are known to have come up the Danube to spawn and were caught in the region on a large scale historically (Borić 2001; Borić *et al.* 2004).

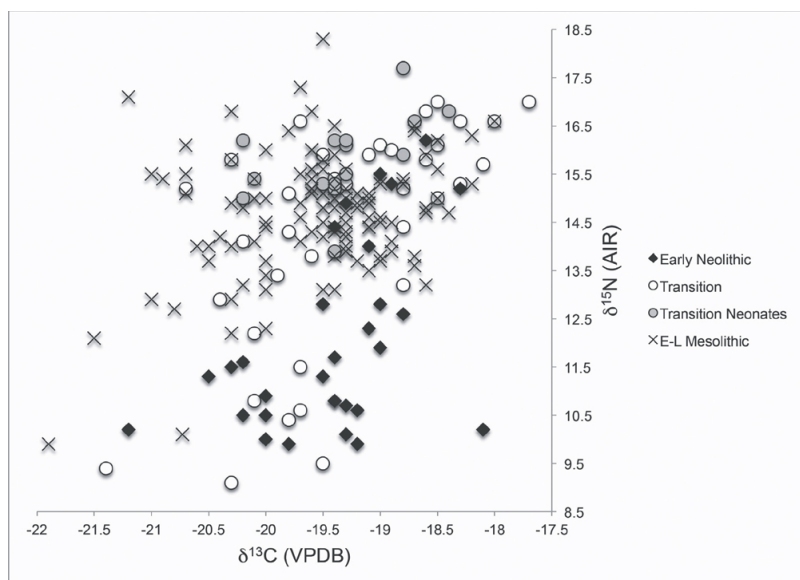


Figure 7.3. Plot of $\delta^{13}\text{C}$ and $\delta^{15}\text{N}$ values on Mesolithic and early Neolithic human bone collagen from the Danube Gorges area ($n = 211$) (sources: [Table 7.1](#)).

During the Mesolithic–Neolithic transition phase (c. 6200–5950 cal BC), two individuals in the Danube Gorges area are found in the URQ of the scatterplot, again suggestive of marine dietary input through the consumption of anadromous species (burial 20 from Hajdučka Vodenica and burial H63 from recent excavations at Vlasac: Borić 2011; Borić *et al.* 2014). Yet, important changes are now evident in the distribution of the individuals assigned to this phase. One should note that neonates, which comprise a large group of burials at Lepenski Vir (Borić and Stefanović 2004; Stefanović and Borić 2008), are plotted separately from children and adults to differentiate the nursing signal present in some of the values from this phase. Of 37 children and adults from five different sites in this region and dated to the Mesolithic–Neolithic transition phase, seven individuals have $\delta^{15}\text{N}$ values below 12‰. All of these individuals come from Lepenski Vir (burials 7/I, 14, 26, 54a, 54b, 99, 122: Borić 2016 and references therein). An additional burial from the same site exhibits a borderline value of 12.2‰ (burial 93). The concentration of these individuals at Lepenski Vir is notable but not surprising, as the site offers the best record for the transitional aspects of the settlement and burial record in the region. This is also the period during which hybrid cultural aspects are found at Lepenski Vir, with the introduction of Neolithic novelties apparent in material culture (ceramics, polished stone axes, new types of ornaments and osseous tool technologies, Borić 2011; 2016; Borić and Cristiani in press). It has been suggested that this is a period of intense contacts and exchanges between the fisher-foragers in the Danube Gorges and the first farming groups from the surrounding areas (Borić *et al.* 2014).

There is also a likely chronological overlap between Mesolithic traditions and ways of living at upstream sites in the Danube Gorges area *sensu stricto*, and the downstream area of the region open to the Wallachian Plain, where early Neolithic sites seem to have been established for the first time towards the end of the

seventh millennium cal BC (see below). This scenario is strongly supported by the increase in the presence of non-local individuals, based on strontium isotope analysis (Borić and Price 2013). While there is only one case of a clear-cut correspondence between the $\delta^{15}\text{N}$ value of 9.5‰ and a non-local strontium ratio individual (burial 122, an isolated juvenile skull placed between the trapezoidal limestone floors of two buildings: Borić 2016), perhaps significantly other non-local individuals assigned to this phase were also reported in the context of the following burials with lower $\delta^{15}\text{N}$ values: 7/I (a disarticulated skull marked as 7/II was non-local), 14 (primary burial 13 found in the same burial pit was non-local), 54a and 54b (primary burial 54e found in the same burial location was non-local). In addition, burial 26 with a lower $\delta^{15}\text{N}$ value is possibly non-local. These data tentatively suggest that reduced trophic levels, more consistent with dietary pathways based on the consumption of terrestrial C_3 species, found at Lepenski Vir during the period of cultural changes and contact with Neolithic groups are probably related to (the influence of) non-local individuals being buried at this locale and probably spending part of their lives here, too. The presence of non-local individuals with dietary habits different from those of local foragers might have started influencing the latter in the direction of a reduced consumption of fish. However, it is striking that there are no obvious and marked signs of non-local identity in the mortuary arena, as most of the burial rites during this transitional phase are consistent with the tradition of late Mesolithic mortuary customs: an extended supine position parallel with the Danube and heads pointing downstream, often in close association with architectural features of trapezoidal buildings, contrasting with the early Neolithic flexed position both within and outside the Gorges.

Considering isotope values for neonate burials at Lepenski Vir, several neonates show enriched values at the top of the scatterplot indicative of the nursing signal for babies of mothers with elevated $\delta^{15}\text{N}$ values. In some other cases neonate values directly overlap

with higher trophic levels of adult individuals and may suggest either that these children died at birth, thus reflecting isotope signatures of mothers in the ULQ of the scatterplot, or that these values reflect nursing signals from mothers with lower $\delta^{15}\text{N}$ values, also documented during this phase.

The onset of the early Neolithic (c. 5950–5500 cal BC) in the Danube Gorges saw significant changes that were, however, already under way during the Mesolithic–Neolithic transition phase. This is the period of consolidated Neolithic presence at all the locales previously occupied in the Mesolithic, along with the likely establishment of new settlements (Borić 2011). However, the burial record is confined to a few sites. The only larger group of burials confidently datable to the early Neolithic and found at a site inhabited in the Mesolithic comes from Lepenski Vir. Two other locations yielded a relatively large number of burials that can be associated with the early Neolithic populations in this region: Ajmana and Velesnica, located farther downstream from the downstream entrance into the Danube Gorges. Yet, at least some of these individuals might have chronologically overlapped the transition period in the region (Bonsall *et al.* 2015a; Borić 2011; Borić and Price 2013). These might have been the groups of Neolithic farmers that came into contact with autochthonous Mesolithic populations farther upstream on the Danube and started influencing them (see above). All of the individuals with stable isotope values from Ajmana and Velesnica exhibit dietary signatures indicative of terrestrial diets, probably in great part derived from the consumption of domestic animals and cereal foods, but we should not entirely exclude fish consumption during this period. Of 13 analysed individuals placed in the same multiple burial location at Ajmana, three are non-local based on strontium isotope ratios (Borić and Price 2013). At Lepenski Vir, there are more individuals with likely terrestrial diets during this period, and these by and large correspond with non-local strontium ratios (burials 8, 17, 19(3), 20, 32a and 88), but one non-local adult

female (burial 66) has a $\delta^{15}\text{N}$ value of 14.9‰ indicative of substantial fish contribution to the diet (Borić and Price 2013). Moreover, a number of other individuals assigned to this phase (burials 19, 31a, 32b, 42a, 44, 51, 55a, 73 and 74), some of which are primary burials in crouched positions indicative of Neolithic burial practices, maintain high $\delta^{15}\text{N}$ values and one would assume that again consumption of fish is responsible. However, recent work on sulphur isotopes in this region may challenge this assumption and complicate the story.

The previously mentioned study by Nehlich *et al.* (2010) examined sulphur ^{34}S isotopes on a selected number of individuals from several sites in the Danube Gorges in order to better understand the role of fish in the diet. Sulphur in bone collagen derives from the essential amino acid methionine. Marine organisms have $\delta^{34}\text{S}$ values of c. 20‰ and terrestrial organisms from -5 to 10‰ (Krouse 1980). Since fish has a greater proportion of methionine than terrestrial mammals, the consumption of even small amounts of fish is likely to be recorded in consumer $\delta^{34}\text{S}$ values (Nehlich *et al.* 2010, 1137). The dietary reconstruction regarding the relative contribution of fish to human diet in the Danube Gorges area established a baseline by analysing fish and mammal remains from the same sites. Based on the currently published data, $\delta^{34}\text{S}$ values below 6‰ reflect primarily terrestrial protein sources, values between 6 and 10‰ reflect mixed diets from both aquatic and terrestrial systems, and those over 10‰ point to diets dominated by fish. While a more robust sample is needed for more conclusive results, some interesting patterns can be observed, primarily concerning chronological differences. The chronological ordering is based on both direct AMS measurements for some of the analysed individuals (burial 17 from Vlasac; AMS-dated burial 15 from Padina is found in the same position and next to burial 16, suggesting their contemporaneity; burial 12 from Padina; burial 8 from Hajdučka Vodenica; Borić 2011) and on their stratigraphic position.

Plotting $\delta^{34}\text{S}$ values for each of the measured individuals against their suggested chronological period (Fig. 7.4), a group of early Mesolithic individuals from Padina, Lepenski Vir and Vlasac is clearly separated from the late Mesolithic sample as having a limited contribution of fish in their diet (Bonsall *et al.* 2015b; Borić 2012, 28). Moreover, while the $\delta^{15}\text{N}$ values for this group of early Mesolithic individuals are largely indistinguishable from the $\delta^{15}\text{N}$ values of late Mesolithic individuals (Fig. 7.4B), the $\delta^{34}\text{S}$ values apparently tell a different story and this calls for the need to use sulphur isotope analysis as a complement to the routine use of carbon and nitrogen in palaeodietary reconstructions. Further research focused on more detailed dietary reconstructions using FRUITS Bayesian modelling (Fernandes *et al.* 2014), which can provide estimates of the relative contribution of different dietary sources (e.g. Nehlich and Borić 2015). There is currently only one individual with a published $\delta^{34}\text{S}$ value that can be attributed to the early Neolithic phase, burial 74 from Lepenski Vir, and while its $\delta^{15}\text{N}$ value would suggest a diet with significant contribution of fish, the $\delta^{34}\text{S}$ value indicates very limited fish consumption, which would be consistent with the expectation of more terrestrial C_3 dietary pathways in the Neolithic.

Independent evidence for the introduction of new dietary practices at the beginning of the sixth millennium cal BC is found in the presence of caries on the teeth of two non-local women at Lepenski Vir (burials 32a and 88), suggesting that starchy foods were an important part of their diets (Grga 1996; Radović 2013). This pattern is further confirmed by the identification of *Cerealia* starch granules in dental calculus (Cristiani *et al.* 2016).

The arrival of new resources is also indicated by spoons made from cattle bones, which have been found at several early Neolithic sites across the Balkans (Nandris 1972). Some examples were found at Schela Cladovei (Bonsall 2008, fig. 10.9) but not at other sites, including phase III deposits at Lepenski Vir.

Discussion

The previous discussion suggests that complex modes of subsistence must have been practised in the Danube Gorges, but this perhaps also applies to other, adjacent regions of the Balkans and to south-east Europe as a whole. Rather than viewing these modes of subsistence as immutable, it is likely that individual adjustments and alterations in food choices shaped the complex reality that combined the two different foodways heuristically identified as ‘Mesolithic’ (game- and fish-dominated) and ‘Neolithic’ (dominated by domestic animal and plant foods). For the actors in these processes, culinary and perhaps ritual exchanges, or taboos and prohibitions regarding the consumption of certain animal or plant species coupled with the symbolic, ideological and social connotations of particular foodways, must have been of paramount importance.

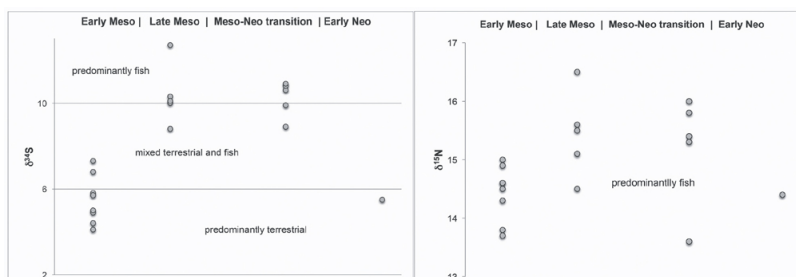


Figure 7.4. Comparison between $\delta^{34}\text{S}$ and $\delta^{15}\text{N}$ values on the same individuals from the Danube Gorges area by main chronological periods ($n = 19$). Source: Nehlich et al. 2010.

While many more questions remain to be answered in this regional context, especially concerning the implications of $\delta^{34}\text{S}$ data on current paleodietary reconstructions or the exact role of marine foods in coastal areas in both the Mesolithic and Neolithic, a wider regional pattern of stable isotope data is indicative of widespread and seemingly quick adoption of more terrestrially-based dietary pathways with the arrival of Neolithic groups,

practices and materialities. However, in the Danube Gorges – the only area of the region where the shift can be followed with a robust sample and fine-grained chronological control – it seems that the arrival of new people – probably originating in Neolithic groups – among foragers sowed the seeds of change in the traditional, late Mesolithic reliance on largely freshwater and some anadromous fish. If we consider this microregion as representative of the nature of the transitional process and forager-farmer interactions in south-east Europe as a whole, the change in the consumption of fish was not wholesale and immediate. Yet, by the mid-sixth millennium cal BC, even those groups that inhabited locales suitable for fishing, such as Vinča, acquired the majority of their dietary protein from terrestrial sources, likely domestic animals and plants. This period also coincides with the time when the whole area of the Danube Gorges and locales that were used in the previous millennia for intense fish harvesting were abandoned and possibly considered marginal among middle Neolithic Vinča culture groups with their increasing focus on cattle-breeding (Borić 2011; Orton 2012).

Britain and Ireland

One of the first challenges to the cultural-historical model for the transition to agriculture in Europe, including Britain, which had dominated much of the twentieth century, was from Robin Dennell (1983), who suggested, rather speculatively, the possibility of some local animal domestication. This was limited to cattle and pig in the context of Britain, which has no native wild sheep or goats. A more sustained critique of the ‘Neolithic Revolution’ model in a British context came in the late 1980s, persisting throughout the 1990s and beyond. This position had two main elements. Firstly, it downplayed the importance of an economic shift towards the reliance on domesticated plants and animals in the early/middle Neolithic, c. 4000–3000 cal BC. While

it was incontrovertible that wheat, barley, cattle, pig, sheep and goat were present, these were seen as exotic foods used largely in ceremonial contexts, with the bulk of the subsistence economy still reliant on hunting and gathering (Armit and Finlayson 1992; Thomas 1991). Secondly, it emphasised the importance of the indigenous, hunter-gatherer population as active agents in the process of Neolithisation, in its most extreme expression seeing no need for any movement of people from the Continent to Britain at all (Thomas 2003; 2007). Without rehearsing the arguments here (see Rowley-Conwy 2004; 2011; Schulting 2008; 2013a; 2015b; Sheridan 2010), this position seems untenable, particularly in the light of the newly emerging genetic evidence (Cassidy *et al.* 2016; Mathieson *et al.* 2015).

Ironically, at the same time that the debate over the (non-)importance of domesticated resources was reaching its resolution largely in favour of the negative, some of the first stable carbon and nitrogen isotope analyses of human bone – the utility of which in terms of addressing dietary shifts across the Mesolithic–Neolithic transition was initially demonstrated in Denmark (Tauber 1981; 1986) – were becoming available (Richards and Hedges 1999a; Richards *et al.* 2003; Schulting 1998; Schulting and Richards 2002a; 2002b). From the outset, it was clear that this evidence was more consistent with a rapid and, if not complete, then certainly major shift in subsistence towards the use of terrestrial resources in coastal areas of Britain, just as had been seen previously in Denmark. Taken in context, and given the attested presence of domesticated plants and animals (the latter overwhelmingly dominating every known Neolithic faunal assemblage; Schulting 2013b), it seems logical to interpret this as a shift to a reliance on farming. There is little evidence for any experimental phase; rather, just as with the knowledge to produce thin-walled, finely made pottery and to build mortuary monuments in keeping with the design concepts of earlier prototypes on adjacent parts of the Continent (Sheridan 2007;

Sheridan *et al.* 2008), farming appears fully formed, being realised by highly competent practitioners. Both Britain and Ireland witnessed widespread integrated farming systems in the early Neolithic, incorporating stable arable fields (Bogaard and Jones 2007), extensive field systems (Caulfield *et al.* 1998) and domestic animal herds, the latter emphasising the central importance of cattle for meat and prestige (Schulting 2008; 2013a), as well as for milking (Copley *et al.* 2005; Cramp *et al.* 2014) and manure (Bogaard *et al.* 2013).

The database: chronological trends

Stable isotopic data have been steadily accumulating over the last decade, though with a strong Neolithic bias (Fig. 7.5 and Table 7.2). There is very limited human skeletal material from the British Mesolithic; some new results are available from inland sites, but since these diets are based on terrestrial resources, they offer little insight into the process of Neolithisation (Schulting 2013b). Recent excavations at Foxhole Cave, Gower, south Wales, have provided a small number of isolated human bones and teeth that have been directly ^{14}C -dated to the Mesolithic, with stable isotope values continuing to support a pattern of significant use of marine resources at this time, compared to little or no evidence for those elements dated to the earlier Neolithic from the same site (Schulting *et al.* 2013a). Finally, the identification using ZooMS of small human bone fragments from Cnoc Coig, Oronsay, has provided important new stable isotope data, though it is not clear how many new individuals are represented, given the scattered nature of the material (Charlton *et al.* 2016).

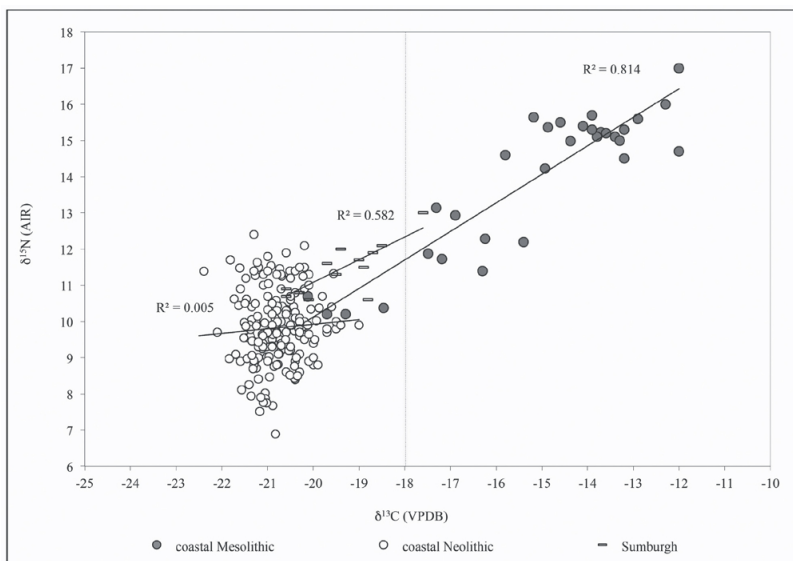


Figure 7.5. Post-weaning human bone/dentine collagen $\delta^{13}\text{C}$ and $\delta^{15}\text{N}$ values from coastal/near-coastal Mesolithic ($n = 31$) and Neolithic ($n = 185$; Sumburgh $n = 14$) sites in Britain and Ireland (sources: [Table 7.2](#)).

The overall pattern for the Mesolithic shows considerable isotopic, and hence dietary, variation even in coastal/near-coastal locations, although the great majority of individuals lie in the URQ, indicating varying reliance on marine resources ranging from moderate, balanced use to practically complete dependence. Emphasising this is the very strong positive correlation between $\delta^{13}\text{C}$ and $\delta^{15}\text{N}$ values ($r^2 = 0.814$). The three individuals falling just within the LRQ were presumably exploiting low-trophic-level marine foods. Another two or three individuals, however, appear to have had entirely terrestrial diets (LLQ) even though their remains were found in coastal locations. These may have been recent arrivals to the coast; also, none are complete burials, and one element, an ulna, appears to have been butchered (Schulting *et al.* 2015).

By contrast, there is a substantial amount of new evidence for

the Neolithic, so that we are now in a much better position to look at isotopic variability within Britain and Ireland. Most notable are the results from Orkney and Shetland, given their location surrounded by seas rich with fish and sea mammals. Despite this, the stable isotope results from the chambered tomb of at Quanterness, Orkney, indicate minimal use of marine resources (Schulting *et al.* 2010). The mammalian fauna are also completely dominated by domestic animals. Fish do appear to have featured in the diet, but in what must have been a decidedly minor capacity. A very different situation is seen at Sumburgh, Shetland (Montgomery *et al.* 2013), with individuals showing variable though generally still minor contributions from marine foods; only one sample falls in the URQ. That this is in fact the result of consuming marine foods is clear from the reasonably strong correlation coefficient ($r^2 = 0.582$). Incremental analyses of tooth dentine at Sumburgh revealed that marine foods did feature more strongly for short periods – perhaps some months – in some individuals, who, interestingly, tended to die at a younger age than those retaining more terrestrial diets throughout childhood (Montgomery *et al.* 2013). As suggested by the authors, the episodic use of marine foods here may be related to crop failures, pests, spoilage and diseases striking animal herds: all occurrences well attested in the historical record (Jordan 1996). What is perhaps most striking about Sumburgh is that people were attempting to farm here at all, rather than relying more strongly on the locally available marine resources. Presumably this speaks to the cultural importance of maintaining a farming identity (cf. Sjögren 2003).

Table 7.2. Mesolithic and early/middle Neolithic human stable isotope values in Britain and Ireland

<i>Site</i>	<i>Country</i>	<i>Location</i>	<i>Period</i>	$\delta^{13}C$	$\pm$	$\delta^{15}N$	$\pm$	n	<i>Comments</i>	<i>Source</i>
Cnoc Craig & Caisteal nan Gilleann, Ormsay	Scotland	coastal	LM	-13.5	1.0	15.3	0.6	15	shell middens	Charlton <i>et al.</i> 2016; Richards and Mellars 1998
Holm of Papa Westray North	Scotland	coastal	MN	-19.9	0.6	10.5	0.6	5	chambered tomb	Schulting and Richards 2009
Quanterness	Scotland	coastal	MN	-20.5	0.4	11.1	0.6	20	chambered tomb	Schulting <i>et al.</i> 2010
Carding Mill Bay	Scotland	coastal	MN	-21.4	0.2	9.3	0.4	10	within Mesolithic shell midden	Schulting and Richards 2002a
Crarae	Scotland	coastal	MN	-21.6	0.3	9.2	0.3	3	chambered tomb	Schulting and Richards 2002a
Creagan Uamh	Scotland	coastal	MN	-20.8	0.4	-	-	4	cave site	Hedges <i>et al.</i> 1998
Raschoille Cave	Scotland	coastal	EN/MN	-21.1	0.6	-	-	14	cave site	Bonsall 1999
Clachaig & Torlin	Scotland	coastal	EN	-21.6	0.4	11.3	0.5	6	chambered tombs on Arran	Bonsall 1999
Embo	Scotland	coastal	MN/LN	-20.5	0.7	9.5	0.2	3	chambered tomb	Bonsall 1999
Culsoquhey	Scotland	inland	MN	-21.5	-	7.7	-	1	chambered tomb	this paper
Kent's Cavern	England	coastal	Meso	-19.5	0.3	10.2	0.0	2	could be 1 individual	Schulting <i>et al.</i> 2015
Preston Docks	England	coastal	EN/MN	-21.2	0.1	-	-	10	Neolithic based on dates	Richards and Hedges 1999a
Broadsands	England	coastal	EN	-20.3	0.4	9.2	0.5	5	chambered tomb	Sheridan <i>et al.</i> 2008
Cow Cave, Chudleigh	England	coastal	EN	-21.0	0.3	9.5	0.3	2	cave	Sheridan <i>et al.</i> 2008
Hay Wood Cave	England	coastal	EN/MN	-20.3	0.3	10.0	0.5	10	cave	Schulting <i>et al.</i> 2013b
Totty Pot	England	coastal	EN/MN	-21.3	0.3	11.1	0.5	3	cave	Schulting <i>et al.</i> 2010
Chalk & Ottham Hills	England	coastal	EN	-20.6	0.5	10.3	0.5	6	causewayed enclosures	Hamilton and Hedges 2011
Whitehawk	England	coastal	EN	-20.6	0.3	9.9	0.1	3	causewayed enclosure	Hamilton and Hedges 2011
Coldrum	England	coastal	EN	-20.8	0.2	10.4	0.8	22	megalithic tomb	Wysocki <i>et al.</i> 2013
Ascot-under-Wychwood	England	inland	EN/MN	-21.0	0.7	9.4	0.8	12	chambered tomb	Hedges <i>et al.</i> 2007
Belas Knap	England	inland	EN/MN	-21.1	0.3	9.4	0.3	10	chambered tomb	Schulting <i>et al.</i> nd
Dinnington	England	inland	EN/MN	-21.3	0.4	9.2	0.2	4	chambered tomb	unpublished data
Fussell's Lodge	England	inland	EN/MN	-20.9	0.4	9.4	0.4	17	long barrow	Wysocki <i>et al.</i> 2007
Hambleton Hill	England	inland	EN/MN	-20.8	0.4	9.3	0.7	52	causewayed enclosure	Richards 2008
Hazleton North	England	inland	EN/MN	-20.8	0.2	9.2	0.5	23	chambered tomb	Hedges <i>et al.</i> 2008
Hill Croft Field	England	inland	EN/MN	-19.5	-	8.1	-	1	causewayed enclosure	Hamilton and Hedges 2011
Maiden Castle	England	inland	EN/MN	-20.6	-	9.2	-	1	causewayed enclosure	Hamilton and Hedges 2011
Wayland's Smithy	England	inland	EN/MN	-20.7	0.2	10.2	0.5	14	chambered tomb	Whittle <i>et al.</i> 2007
West Kennet	England	inland	EN/MN	-20.8	0.5	10.2	0.8	16	chambered tomb	Bayliss <i>et al.</i> 2007
Whitwell	England	inland	EN/MN	-21.0	0.5	9.6	0.6	16	chambered tomb	Vyner 2011
Windmill Hill	England	inland	EN/MN	-21.3	0.2	9.0	0.5	8	causewayed enclosure	Hamilton and Hedges 2011
Caldley Is.	Wales	coastal	Meso	-16.1	1.2	13.6	1.5	9	cave sites	Schulting and Richards 2002b
Foxhole cave	Wales	coastal	Meso	-16.7	1.6	11.3	0.9	3	at least 2 inds. represented	Schulting <i>et al.</i> 2013a
Caldley Is.	Wales	coastal	EN/MN	-20.8	0.7	9.1	0.2	3	cave sites	Schulting and Richards 2002b
Foxhole cave	Wales	coastal	EN/MN	-20.5	0.3	9.5	0.6	7	at least 3 inds. represented	Schulting <i>et al.</i> 2013a
Rockrose & Upper Blackhole, Gower	Wales	coastal	EN/MN	-20.9	0.7	10.1	1.0	5	cave sites	unpublished data
Priory Farm Cave & Red Fescue	Wales	coastal	EN	-20.3	0.5	9.7	0.6	2	cave sites	Schulting and Richards 2002b
Little Hoyle Cave	Wales	coastal	EN/MN	-20.8	0.5	8.5	0.6	7		Schulting and Richards 2002b
Ifon Quarry	Wales	coastal	EN/MN	-20.7	0.3	9.6	1.0	4	frisure	unpublished data
Gop Cave	Wales	coastal	EN/MN	-20.8	0.6	9.9	1.1	3	cave	unpublished data
Pant y Wenol	Wales	coastal	EN/MN	-21.0	0.4	9.1	1.1	14	cave site, north Wales	unpublished data
Parc le Breos	Wales	coastal	MN	-20.5	1.0	0.6	0.4	10	chambered tomb	Whittle and Wysocki 1998
Thornwell	Wales	coastal	EN/MN	-20.5	0.3	9.6	0.7	13	chambered tomb	unpublished data
Ferrier's Cove	Ireland	coastal	LM	-14.0	0.1	16.8	-	3	only 1 $\delta^{15}N$ measurement	Woodman 2009
Poulnabrone	Ireland	coastal	EN/MN	-21.1	0.1	9.6	1.2	13	portal tomb	Ditchfield 2014
Ballylallon & Ballyedmond	Ireland	coastal	EN	-21.0	0.3	10.3	1.0	3	court tombs	Schulting <i>et al.</i> 2012
Ballynahatty	Ireland	coastal	MN	-21.4	0.3	10.9	0.4	3	passage tomb affinity	Schulting <i>et al.</i> 2012
Millin Bay	Ireland	coastal	MN	-21.4	0.2	10.8	0.7	3	passage tomb affinity	Schulting <i>et al.</i> 2012
Annaghmare	Ireland	inland	MN	-22.3	-	11.3	-	1	court tomb	Schulting <i>et al.</i> 2012
Knowth	Ireland	inland	MN	-21.5	0.4	11.0	0.7	14	passage tomb	Schulting <i>et al.</i> forthcoming
Mound of the Hostages	Ireland	inland	MN	-22.0	0.3	11.3	0.8	8	passage tomb	Brindley <i>et al.</i> 2005

To the Orkney and Shetland results can be added data from a number of locations around the coasts of mainland Britain, supplemented by a much smaller dataset from coastal Neolithic Ireland. The reason for the focus on coastal sites relates to the

ability of $\delta^{13}\text{C}$ and $\delta^{15}\text{N}$ measurements to distinguish between essentially terrestrial diets and diets with any significant input of marine foods (by which is meant a contribution on the order of 5–10% or more of dietary protein). The subsidiary argument that, in the Neolithic, such terrestrial diets are in fact based on domesticated crops and animals relies on the following points: 1) earlier Neolithic faunal assemblages are all dominated by domesticated animals, regardless of their location (Schulting 2013b); 2) a sudden shift to a reliance on wild terrestrial resources in coastal areas in the Neolithic makes little sense (*contra* Thomas 2003), given the previous reliance on coastal resources by hunter-gatherer communities, and moreover would probably be unsustainable given inferred higher Neolithic populations levels; and 3) lipid residues from Neolithic pottery from coastal locations also show an overwhelmingly terrestrial signal, and furthermore suggest the importance of dairying from the outset, both in southern and northern Britain (Copley *et al.* 2005; Cramp *et al.* 2014).

Confirming previous research (Richards *et al.* 2003; Schulting 2013a), coastal Neolithic diets (including those in Orkney) were overwhelmingly focused on terrestrial resources. There is no positive correlation between $\delta^{13}\text{C}$ and $\delta^{15}\text{N}$ ($r^2 = 0.005$), one of the hallmarks of the consumption of marine protein (Richards and Hedges 1999b). Only two adults from Quanterness exhibit $\delta^{15}\text{N}$ values above 12‰, but without any concomitant increase in $\delta^{13}\text{C}$, suggesting that marine foods are unlikely to be the explanation here (see below). Moreover, it seems that this pattern persists throughout the entire Neolithic of Britain and Ireland, from c. 3900 to 2500 cal BC (Fig. 7.6). Few $\delta^{13}\text{C}$ values are higher than –19.0‰ and of these, all but one are from Sumburgh, where farming must have been a riskier proposition (Montgomery *et al.* 2013), as indeed it is today. The other exception (from Embo, north Scotland) is also a clear late Neolithic outlier, removed by over three standard deviations from the $\delta^{13}\text{C}$ mean of $-20.8 \pm$

0.6‰ (n = 219).

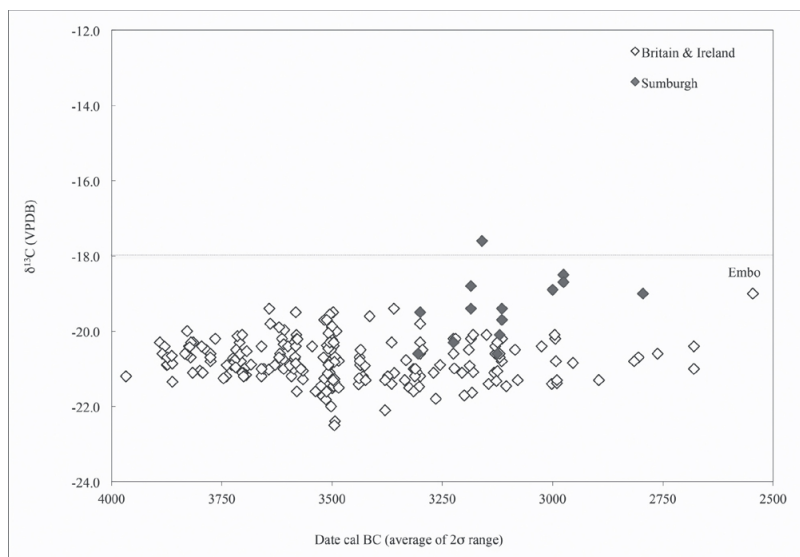


Figure 7.6. Human bone/tooth collagen $\delta^{13}\text{C}$ values from British and Irish Neolithic coastal and near-coastal sites (within 10 km of the modern coast or estuary) plotted against the average of the 95.4% range of the calibrated radiocarbon date (n = 203; sources: [Table 7.2](#)).

This is not to say that farming was everywhere the same across Britain and Ireland ([Fig. 7.7](#)). Farming practices have always varied across both islands and continue to do so today. But, in the light of the multiple lines of evidence alluded to above (human bone collagen and pottery lipid stable isotope analyses, faunal assemblages, arable weed ecology), such regional differences are best considered as variations on a decidedly farming theme. Nowhere is there evidence for the continued *reliance* on wild resources as the major part of the subsistence economy. A simple division of the available human isotopic data from both coastal and inland locations (excluding a small number of young children with elevated $\delta^{15}\text{N}$ values likely reflecting a nursing signal) in four modern regions – Scotland, Wales, England

and the island of Ireland – provides a preliminary means of investigating regional variability in Neolithic diets. The results demonstrate that there are clear isotopic differences regionally (Figs 7.7 and 7.8; Table 7.3). ANOVA with Bonferroni post-hoc tests indicates that the Irish $\delta^{13}\text{C}$ values are significantly lower (by c. 1‰) than in England or Wales. The Scottish (even excluding Sumburgh) and Irish data are significantly elevated in $\delta^{15}\text{N}$ (also by c. 1‰) above England and Wales, while England is elevated above Wales (by c. 0.8‰). Coast–inland comparisons are only possible for England and Ireland, since Wales and Scotland (with a single exception) lack inland sites with bone preservation. Significant coast–inland differences are seen for both isotopes in the Irish data ($p = 0.000$), but while coastal $\delta^{13}\text{C}$ values are higher, $\delta^{15}\text{N}$ values are lower, which is the opposite of what would be expected with the consumption of marine foods. This difference is driven entirely by Poul nabrone, which has surprisingly low $\delta^{15}\text{N}$ values (Ditchfield 2014). In England, coastal $\delta^{13}\text{C}$ values are on average higher, but by only 0.15‰, while $\delta^{15}\text{N}$ values are higher by 0.55‰ ($p = 0.000$). However, this is due entirely to a single site, Coldrum in Kent, where again there is no associated elevation in ^{13}C , making the consumption of marine resources an unlikely explanation (Wysocki *et al.* 2013). Some contribution of freshwater fish has been suggested (Wysocki *et al.* 2013), but this also seems improbable, and an alternative is suggested below.

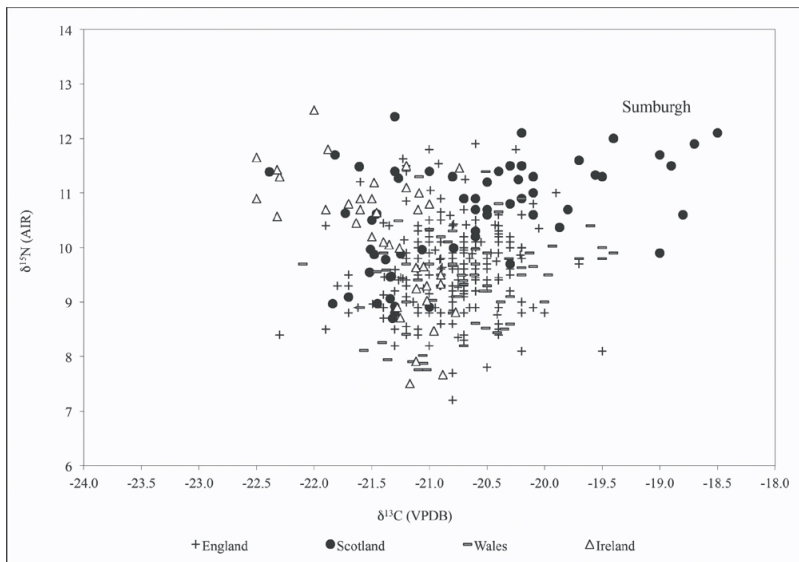


Figure 7.7. Human bone/tooth collagen $\delta^{13}\text{C}$ and $\delta^{15}\text{N}$ values from inland and coastal Neolithic sites in Ireland, Wales, England and Scotland ($n = 377$; sources: [Table 7.2](#)).

Regional patterns

The interpretation of these differences is by no means clear, and a full investigation is beyond the scope of this contribution. However, a few preliminary observations can be made. Firstly, confirming the pattern noted above, all regions are consistent with an entirely terrestrial diet. This is seen in the overall coastal $\delta^{13}\text{C}$ average of $-20.8 \pm 0.6\text{‰}$, which is essentially identical in all regions with the exception of Ireland. The fact that the Irish data are significantly ^{13}C -depleted is more likely to reflect an environmental signal than a dietary difference, although this requires further exploration, as do the higher $\delta^{15}\text{N}$ values. This combination (depleted ^{13}C and enriched ^{15}N) is often interpreted as reflecting the use of freshwater resources (e.g. fish and waterfowl), but there is very limited archaeological or zooarchaeological evidence for this, and indeed Irish waters are

relatively impoverished in freshwater fish compared to Britain.

The comparatively high $\delta^{15}\text{N}$ results from Scotland are heavily biased towards Orkney, though even here the evidence for the consumption of marine foods is limited (Schulting and Richards 2009; Schulting *et al.* 2010). The other way to explain elevated $\delta^{15}\text{N}$ values is through a contribution of freshwater fish and waterfowl, but such resources would not have been plentiful in either Orkney or on the west coast of Scotland, whence much of the remaining data derive. The single inland individual for Scotland, from a chambered tomb at Cultoquhey, Perth and Kinross, is notably lower in $\delta^{15}\text{N}$ (7.7‰) than all other Scottish values. The interpretation of this is uncertain, given that it is a single measurement, though it has been directly AMS-dated to 3627–3365 cal BC (GrA-26922: 4680 ± 40 BP).

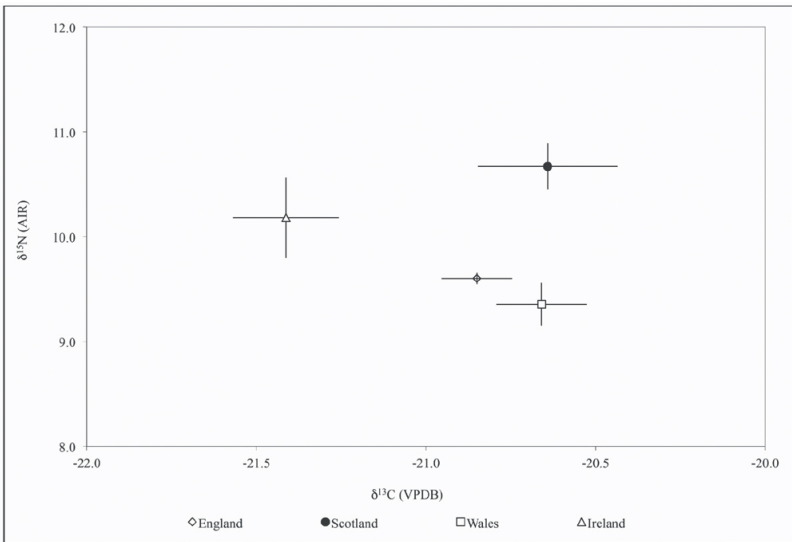


Figure 7.8. Average ± 2 standard errors for $\delta^{13}\text{C}$ and $\delta^{15}\text{N}$ values on human bone/tooth collagen from inland and coastal Neolithic sites in Britain and Ireland ($n = 375$, excluding Sumburgh; sources: [Table 7.2](#)).

Table 7.3. Average Neolithic human $\delta^{13}\text{C}$ and $\delta^{15}\text{N}$ values (± 1 SD)

by region from coastal and inland sites in Britain and Ireland.
 Sumburgh, Shetland, is excluded from Scotland and Britain/Ireland.

Region	coast (within 10 km)						inland					
	$\delta^{13}C$	$\pm$	<i>n</i>	$\delta^{15}N$	$\pm$	<i>n</i>	$\delta^{13}C$	$\pm$	<i>n</i>	$\delta^{15}N$	$\pm$	<i>n</i>
England	-20.7	0.4	58	10.1	0.8	43	-20.9	0.4	180	9.5	0.8	172
Ireland	-21.1	0.2	22	9.6	1.2	22	-21.8	0.5	17	11.0	0.6	17
Scotland	-20.9	0.7	71	10.4	1.0	47	-21.5	—	1	7.7	—	1
Wales	-20.7	0.6	80	9.4	0.9	73	—	—	—	—	—	—
Britain/Ireland	-20.8	0.6	231	9.8	1.0	185	-21.0	0.5	198	9.6	0.9	190
Sumburgh	-19.4	0.9	14	11.5	0.7	14	(includes M1 dentine values)					

The difference in sample size is due to the fact that a number of $\delta^{13}C$ values are those associated with ^{14}C AMS dating.

It has been previously suggested that the circumscribed context of Orkney led to higher stocking rates on the limited good pasture and the increased use of animal manure to maintain and increase crop yields (Schulting *et al.* 2010). We now have a large body of isotopic data on well-dated cattle remains from Skara Brae that provide some support for this hypothesis. Not only are the cattle bone collagen values significantly enriched in ^{15}N compared to cattle in southern Britain (Budd *et al.* in press), but they show a similar tendency to increase over time, as do the human data from Quanterness, the Orcadian site providing the largest single human isotopic dataset (Schulting *et al.* 2010). Thus, animal husbandry practices combined with higher rates of manuring of arable fields could account for the higher human $\delta^{15}N$ results from Scotland, without invoking the need for any dietary difference *per se*. A similar explanation might apply to Coldrum. In any case, this highlights some of the complexities and nuances of interpreting human isotopic data (Schulting 2015b), as well as the need for more ecological baseline data.

Discussion

Due to their insular setting, the process of Neolithisation in Britain and Ireland differs somewhat from the situation across Continental Europe. Many researchers, though not all (Thomas 2003; 2007;

2013), would now accept that a significant element of colonisation is implicated, though discussion continues over the details. Others find this debate too polemic, and seek alternative narratives (Cummings and Harris 2011; Garrow and Sturt 2011). It is hard to deny, however, that this is one of the fundamental questions to which we do want an answer. It surely matters whether we are dealing with a small number of influential individuals coming to Britain and Ireland with novel plants, animals and new ways of doing things, or whether there was a larger population movement that could be considered a true colonisation event or events. Continuing advances in isotopic studies of individual mobility and in ancient DNA research mean that such questions are not intractable. This is not to say that they can be answered at present, nor that isotopic and genetic data are themselves unproblematic or unassailable (Hofmann 2015; Milner *et al.* 2004). Rather, they can provide new lines of evidence to bring to the discussion. The importance of this is hard to overstate: witness the sea-change already brought about by ‘dietary’ stable carbon and nitrogen isotope analyses, lipid residue analyses of pottery and the application of Bayesian statistics to increasingly large radiocarbon datasets (Cramp *et al.* 2014; Richards and Schulting 2006; Richards *et al.* 2003; Schulting 2011; Shennan and Edinborough 2007; Whittle *et al.* 2011). The first genomic sequence from a Neolithic individual from Ballynahatty, Co. Down, Ireland, has found clear evidence of Near Eastern ancestry (Cassidy *et al.* 2016). Moreover, the findings suggest that this individual was part of a population of large effective size. A major study is currently underway across Britain,¹ and will no doubt contribute much to the debate.

One of the objections to a significant impact from Continental migration to Britain in the process of Neolithisation seems to have been that this somehow deprived the indigenous population of an active role in the process (cf. Bender 1978). There also seems to have been the impression that imparting incoming farmers with

agency deprives indigenous hunter-gatherers (Thomas 1988). ‘Agency’ cannot be lost in this way; there is not a limited amount to go around (though it can be downplayed analytically, and this is often the point being made). There may be imbalances in real or perceived power relations, curtailing the range of options available to agents in specific contexts, but this does not make them any the less active participants in the choices made. But as archaeologists we are left with viewing the end result, and from even the medium-term perspective of a few generations (i.e. within community memory) it seems clear that in Britain and Ireland the transition to a committed farming way of life happened very quickly. Here at least, the term ‘revolution’ seems not inappropriate, encapsulated by Charles Tilley as ‘rapid redefinitions between past and future, between shared memories and shared expectations’ (Tilley 1994, 247).

Conclusions

The comparison between south-east and north-west Europe brings into focus both similarities and contrasts. That there are many contrasts is not surprising, given the very different contexts involved, encompassing both geography (the insular position of Britain and Ireland more readily evokes a colonisation model) and culture-historical trajectories. The process of Neolithisation also seems more variable in south-east Europe, perhaps seen most clearly in the well-studied Danube Gorges area, where there is evidence for a transitional phase – especially at Lepenski Vir – that seems distinctly lacking in Britain and Ireland. The concentration of Mesolithic populations in the Gorges, with their rich fisheries, may have placed indigenous communities and incoming individuals or groups (the distinction being an important one, concerning which we have as yet little information) on a more equal footing socioeconomically and demographically than was the case for some other parts of Europe, possibly including Britain

and Ireland (Whittle 1985, 39).

Yet there are also similarities. Firstly, in both cases incomers are being increasingly implicated: through strontium isotope analysis in the Danube Gorges, and through genetic studies in Ireland, though much more data are needed on both accounts. This situation calls even more strongly for an appreciation of cultural transmission theory (Borić 2015b; Borić and Cristiani in press; Cristiani and Borić 2016; Vander Linden 2011). Secondly, the trajectory, though not smooth, is by and large a one-way process in both study areas, with no evidence for a return to a predominantly hunting and gathering way of life (with intriguing and seemingly short-term exceptions where farming may have failed, as at Sumburgh). Finally, while a mixed farming economy is the outcome, and this within a relatively restricted period of time – albeit more rapid in north-west Europe – there are nevertheless considerable variations on this theme in both study areas. This variation is seen both spatially and temporally, and in many ways this is becoming the more interesting question, or at least one that should be taken as seriously as the initial process of Neolithisation. Things did not remain static once the Neolithic appeared, and understanding subsequent changes is among the key challenges for the future (cf. Stevens and Fuller 2012; Whitehouse *et al.* 2014).

While the debate between the centrality of indigenous adoption and precocious incomers in understanding the transition to farming within specific regions is an important exercise, it is also useful to step back and take a broader perspective. This is the spirit in which we have presented this paper, providing some observations, based largely on the stable isotope data, on the process of Neolithisation at the two extremes of Europe.

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Note

1

<http://www.nhm.ac.uk/our-science/our-work/origins-evolution-and-futures/human-adaptation-diet-disease.html>

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dinner at Glen Elg...

Stag do: ritual implications of antler use in prehistory

László Bartosiewicz, Alice M. Choyke and Ffion Reynolds

Introduction

This paper is aimed at investigating stag symbolism contextualising a worked deer (*Cervus elaphus* L. 1758) skull fragment found at Sajópetri–Hosszú-dűlő. The archaeological background and broader implications of this special find are considered, along with archaeological as well as ethnographic parallels in Eurasia.

Excavations at the Iron Age settlement of Sajópetri–Hosszú-dűlő in north-east Hungary (48° 1' N and 20° 53' E) preceded the construction of Motorway M30 and subsequently continued as a French–Hungarian joint project between 1996–2006 (Szabó 2007, 10). Typochronological studies of the find material, especially

pottery, date this site to the La Tène B2–C1 periods, which corresponds to the third century BC (Szabó *et al.* 2004, 27–8). The settlement was found at an altitude of approximately 110m a.s.l. on terraces along the right bank of the Sajó River, upstream from its confluence with the Hernád River (Fig. 8.1). It may be regarded as an outpost of Celtic expansion prior to their subsequent military campaign towards the Balkans. Meanwhile, the westward expansion of the Scythians had a major impact on the balance of power in the region (Kovács 1998, 39).

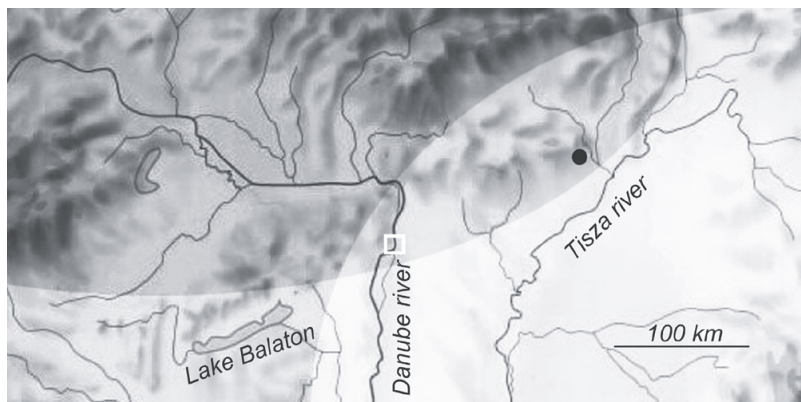


Figure 8.1. Approximate areas of Celtic (NW, dark shade) and Scythian (SE, light shade) influence in northern Hungary during the Iron Age. Sajópetri–Hosszú-dűlő (black dot) and modern-day Budapest (white square) are located in a zone of overlap (base map drawn by L. Zentai, 1998).

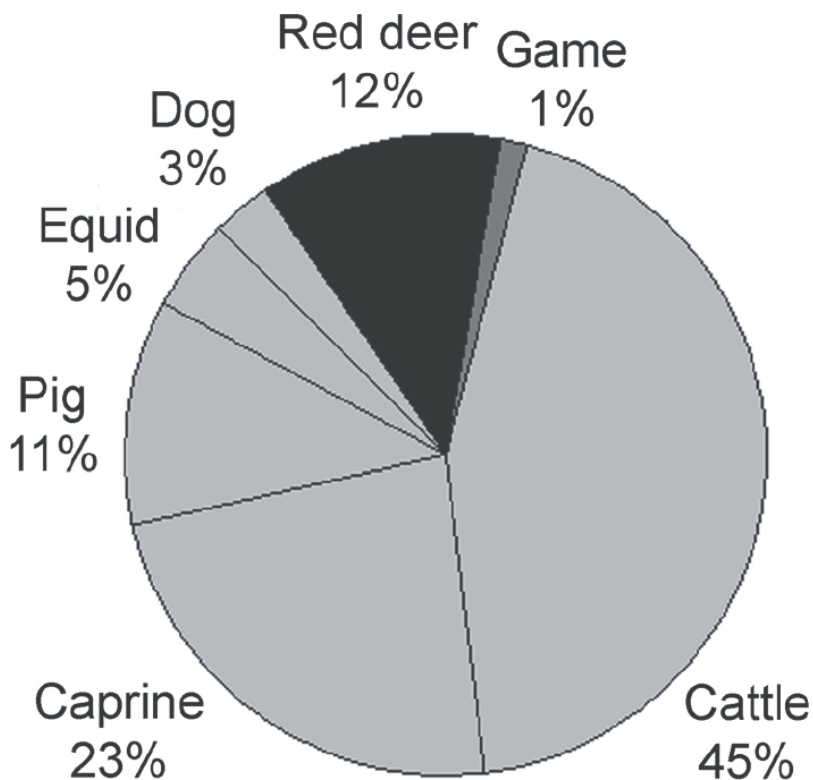
Uncovering a posthole brought to light a curious object consisting of the frontal and parietal bones of a red deer. The top of the neurocranium still has stubs of the antler attached, i.e. the fragment originates from an adult stag (Bartosiewicz 2012). It was recovered from among 2356 identifiable bone specimens (NISP) of which 273 (11.5%) originated from hunted red deer (Bartosiewicz 2007, 286, fig. 68). The contribution of other large game appears negligible (Fig. 8.2). The rest of the animal remains resembled contemporaneous Scythian archaeozoological assemblages in the

area. Bones of sheep and goat (*Caprinae* Gray 1852) were twice as common as those of pigs (*Sus domesticus* Erxleben 1777). Horse (*Equus caballus* L. 1758) also occurred among the food refuse. Cattle (*Bos taurus* L. 1758) dominate in terms of NISP, however they seem to be less diagnostic in reflecting dietary preferences than other ungulates. Game remains include sporadic bones of roe deer (*Capreolus capreolus* L. 1758), wild pig (*Sus scrofa* L. 1758) and aurochs (*Bos primigenius* Bojanus 1827).

The high contribution of red deer to Iron Age meat supplies at Sajópetri–Hosszú-dűlő stands out not only within this smaller region (Bartosiewicz and Gál 2010, 118, [table 9.1](#)) but across north-eastern Hungary (Gál 2005, 145).

Find description

The artefact under discussion here was carefully cut off from the *calvarium*. It includes aboral parts of the frontal bones with both pedicles and the parietals. Only a small section of the skull was retained, in order to serve as a firm base for the antlers ([Fig. 8.3](#)). The coronet, the junction line between the antler and the pedicle, is invisible: the antler was firmly attached to the skull at the time of the kill, likely during the autumn.



NISP=2267

Figure 8.2. The percentual distribution of identifiable Iron Age animal bones at Sajópetri-Hosszú-dűlő. Non-mammalian species are not included.

The antlers broke off or were removed. Almost the entire surface was eroded, obscuring marks of manufacturing. As is shown by failed attempts, a metal blade was used to separate the top of the skull (Figs 8.4 and 8.5). Edges left by the successful cuts are rounded, although it is impossible to establish whether they were smoothed or worn by use. The weathered external surface contrasts with the inside of the brain case, where even the natural patterns of the *dura mater*, the fibrous membrane covering the brain, remained recognisable (Fig. 8.6).

Find circumstances and La Tène period red deer finds in Hungary

The Sajópetri–Hosszú-dűlő stag frontlet was found in a large posthole (feature 95.34) during the 1995 excavations ([Fig. 8.7](#)). This was one of two postholes identified on either side of a trapezoid ground plan, oriented north-west–south-east along its long axis. Traces of a ditch, smaller postholes, and a pit complex were uncovered within a radius of 15m. The find material in feature 95.34 was mixed, indicating that the frontlet was part of a secondary deposit that cannot be directly interpreted as a ritual context.

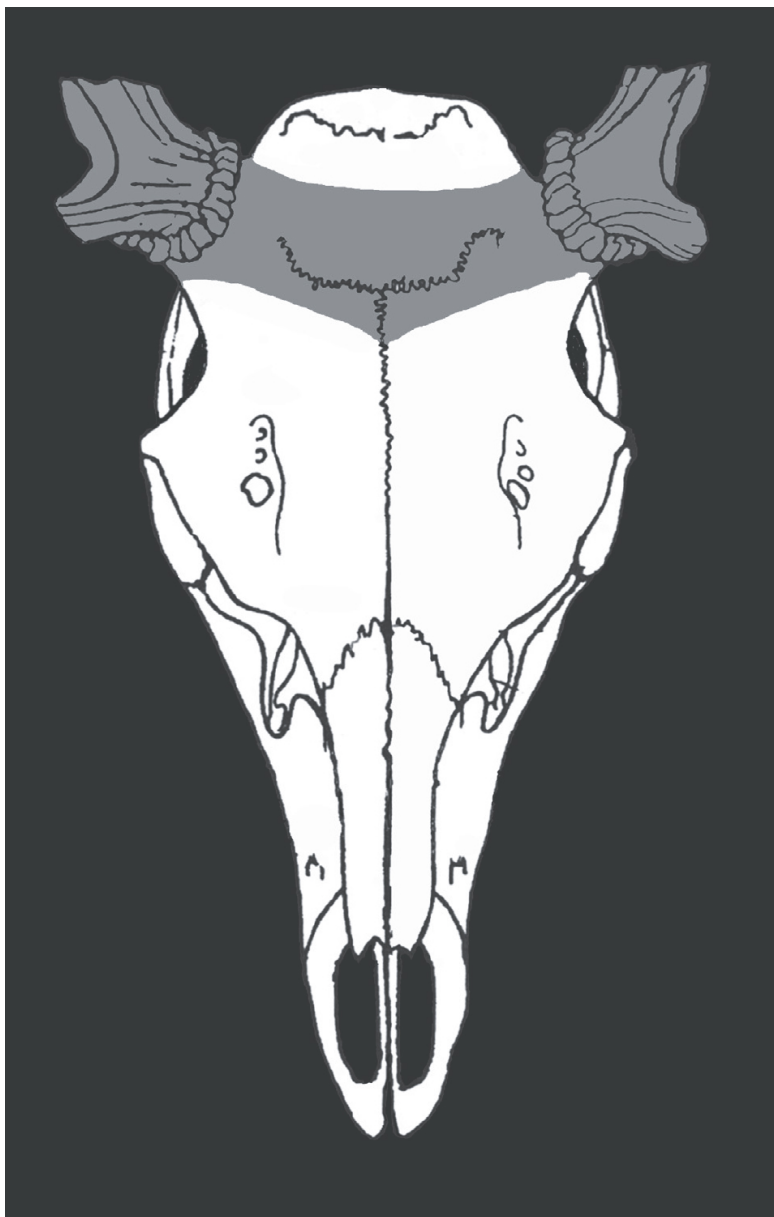


Figure 8.3. The anatomical position of the worked stag skull fragment (drawing: L. Bartosiewicz).

Structured deposits in large pits containing skeletal remains

(antler, skull or complete skeleton) of red deer are common in Hungarian La Tène culture settlements, including the articulated or partly dismembered complete skeletons of stags, such as the individual in storage pit 25 at Keszthely–Fenépuszta (Jerem 2003, 553, fig. 7/5; Szabó 1971; 2005, 102) and the disarticulated but complete stag found at the *oppidum* of Tihany–Óvár (Bartosiewicz 2004). Such finds are not limited to antlered males. A red deer calf was identified in storage pit XVII at Szakály–Rétiföldek (Vörös 1982; 1986) and the complete skeleton of a young stag with developing (spring) antlers came to light in a large storage pit at Balatonőszöd–temetői-dűlő (Belényessy and Horváth 2007, 103, fig. 90). A complete hind was found in a large pit at Zalaszentiván–Kisfaludy-hegy. Skulls and antlers are often present in settlement features, such as the antlered stag skull recovered from a Celtic pit at Balatonlelle–Kenderföld (Marton and Serlegi 2007, 143, fig. 129). Antlers from hunted stags were identified in structures 165 and 380 at the settlement of Sopron–Krautacker (Jerem 2003, 546, figs 1/2–3). La Tène period antler deposits were found in ritual contexts, accompanying severed human heads and dog skeletons in pit 5 and in the pit detected in profile 12 at Pákozd–Keltavár (Bökönyi in Petres 1972, 382) and in features 75 and 183 at Pilismarót–Basaharc (Fettich 1965, 38, figs X/1–1a). Red deer remains are, however, rarely encountered in ‘proper’ human burials. They are known from grave 1 at Mátraszőlős and graves 7, 12 and 13 at Novajidrány (Vörös 1994, 95). At Sopron–Krautacker an antler beam fragment was recovered from grave 10 and the antlered skull of a stag came to light in grave 118 (Jerem 2003, 547, fig. 2). Notably, most of these sites are located in western Hungary, while the Sajópetri–Hosszú-dűlő find post-dates Celtic expansion toward the Great Hungarian Plain at the turn of the fourth and third centuries BC (Szabó 2007, 9).

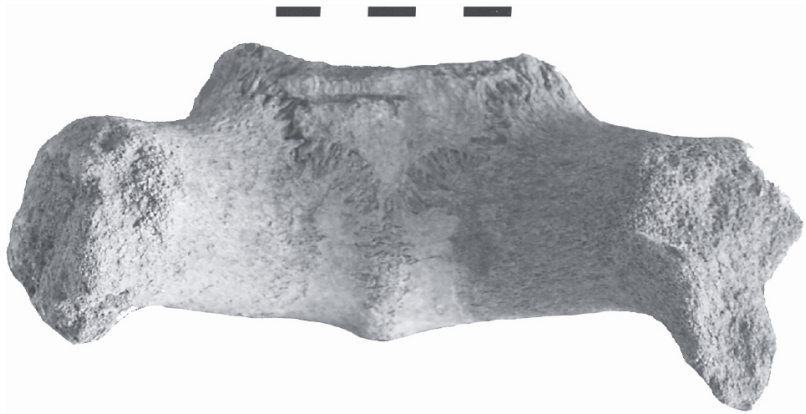


Figure 8.4. Frontal view of the stag skull fragment with fine cut mark at the base of the right pedicle (photo: A. M. Choyke).

The importance, age and size of Iron Age red deer at Sajópetri–Hosszú-dűlő

The aforementioned 11.5% NISP for red deer in the relatively large Sajópetri–Hosszú-dűlő assemblage is high for a peripheral Celtic settlement in eastern Hungary. In the area which later became the Roman province of Pannonia in the west, the red deer proportion reaches 25.7% in the early Roman strata at the Gellérthegy–Tabán *oppidum* (Matolcsi 1979). Red deer was important in the pre-Roman Celtic layers of Budapest–Corvin Square (28.63%; Lyublyanovics 2010). As soon as the Romans established themselves, most venison disappears from the menu. Focusing on deer seems to have been culturally important for Celts, but it remains open whether it was a form of self-representation by their elites prior to the emulation of Roman lifestyles. On the basis of 74 Hallstatt and early La Tène archaeozoological studies in neighbouring areas (Austria, Bohemia/Moravia, southern Germany and Slovenia) the hypothesis that hunting was generally the privilege of a certain social group could not be substantiated (Trebsche 2013, 228).



Figure 8.5. Fronto-occipital view of the stag skull fragment with a rough cut mark in the parietal region on the right side (photo: A. M. Choyke).



Figure 8.6. The inner view of the stag skull fragment, showing the well preserved surface of the brain case (photo: A. M. Choyke).

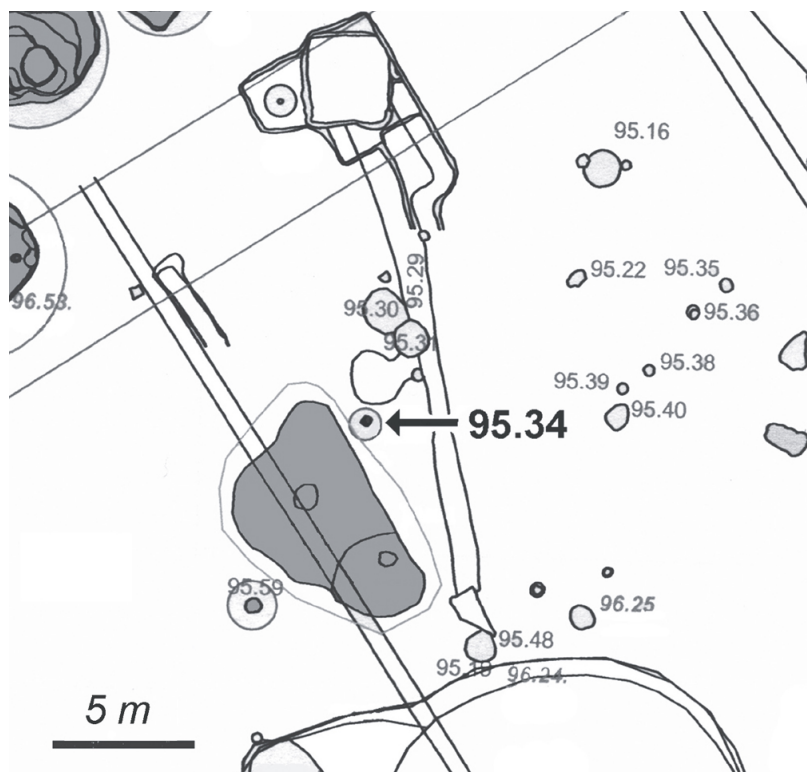


Figure 8.7. The location of posthole 95.34 in relation to other features in the south-western section of the Sajópetri-Hosszú-dűlő settlement (re-drawn by L. Bartosiewicz).

The relative ages of individual deer remains were estimated using dental wear and epiphyseal fusion (Habermehl 1961; 1985). [Figure 8.8](#) compares deer age distributions to those of the most characteristic mammals at Sajópetri-Hosszú-dűlő. The majority of remains represent mature red deer, making the age profile comparable to those of horse and dog, indicative of the targeted hunting of fully grown individuals. The 100–250kg live weight of a mature red deer (Choyke and Bartosiewicz 1984) is more than twice that estimated for an adult prehistoric domestic pig. Considering the high contribution of young pigs, pork yields were significantly smaller than the quantity of venison in spite of the

comparable NISP ratios (11–12%) obtained for both species.

One hundred of the 273 Sajópetri–Hosszú-dűlő red deer bones were measurable, offering an opportunity for comparing them to those from better known Bronze Age assemblages (Vörös 1979). Measurements were taken following the work by von den Driesch (1976). Since epiphyseal fusion varies between skeletal parts (Schmid 1972), deer bones were divided into two groups: measurements potentially representing young adults ('early fusing', e.g. epiphyses in the elbow and hock joints) and bones that ossify only in mature deer ('late fusing', epiphyses in the shoulder and knee joints, metapodia).

In the absence of standard deviations for the measurements of Bronze Age red deer published by Vörös (1979, 638–9), data from Sajópetri–Hosszú-dűlő were plotted within the range of the extreme values of Bronze Age red deer. The resulting individual scores within standardised ranges are thus defined by the respective minima and maxima. Standard range scores ($-1 < \text{SRS} < +1$) for each measurement were calculated as follows:

$$\text{SRS} = (\text{individual measurement} - \text{median}) : (\text{maximum} - \text{minimum})$$

This calculation follows Uerpmann's size index method (Uerpmann 1979, appendix 2) based on mean values and standard deviations. It is aimed at maximising the use of individual measurements of diverse bone fragments by comparing them to the standardised parameters of each measurement in the base 'population'. With the help of this procedure all measurements can be pooled in the same histogram. Due to sexual dimorphism, bone size distributions tend to be distinctly bimodal. It may thus be assumed that the bone dimensions of adult individuals below the median originate from hinds, while those above represent stags.

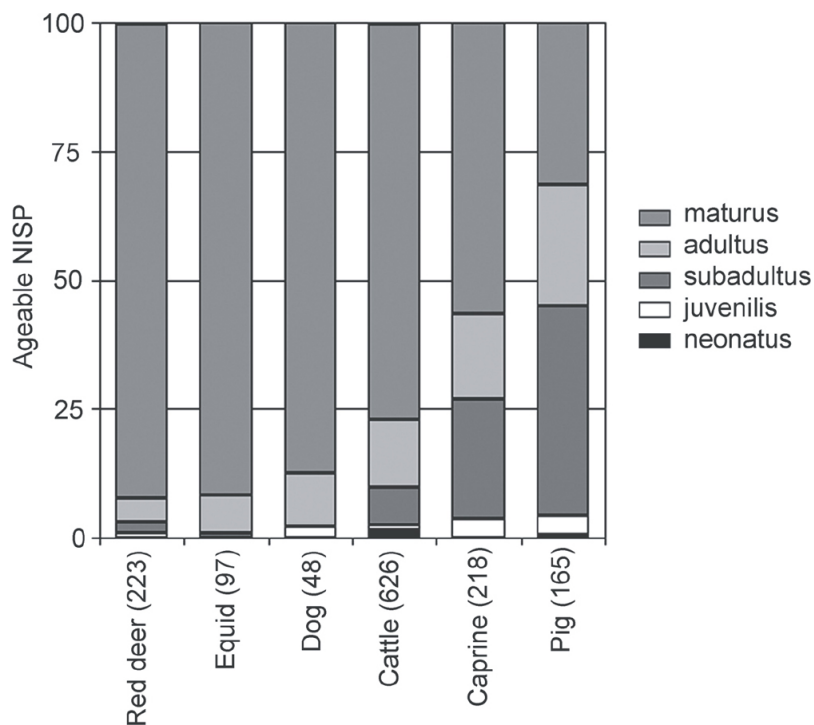


Figure 8.8. The age distribution of major animal groups exploited at Sajópetri–Hosszú-dűlő (drawing: L. Bartosiewicz).

The size distribution of Sajópetri–Hosszú-dűlő deer bones was plotted within the size range of Bronze Age deer in Figure 8.9. A group of measurements is concentrated around the mid-point of the graph. Only a few bones seem to originate from large individuals. Late maturing bones are more or less evenly distributed, reconfirming the pattern seen in the larger set of measurements taken on early maturing epiphyses. Importantly, the frequently cited Iron Age size decrease in domestic ruminants in the Carpathian basin (Bökönyi 1974, 115, fig. 9, 171, fig. 49) is not reflected in the deer bone dimensions from Sajópetri–Hosszú-dűlő. Measurements of the early fusing tarsals in the Iron Age stag from Tihany–Óvár (Hungary) were likewise close to the Bronze Age average (Bartosiewicz 2004, 206–7, figs 4–5). Narrow mediolateral long bone measurements may be explained by the

young age of that stag (4 years).

Cultural and chronological context

Deer have played a special role in European and Eurasian animal symbolism and Celtic culture is no exception (Ross 1992, 378–81). Among Old World zooarchaeological finds the closest possible analogies to this worked specimen are the carved Mesolithic stag neurocrania from Star Carr in northern England (Clark 1954, 172, plates xxii–xxiii; Milner *et al.* 2013). Between 1949 and 1951, 21 adult red deer skull parts with antlers were found (Clark 1954, 170). There is evidence of cut marks made by flint tools, showing that the skin was deliberately removed. The nasal parts were broken off and the fragment edges worked down. Each had pairs of holes perforating the parietal bones, perhaps to hold leather straps to tie the pieces to the head. Clark (1954, 169) suggested that the antlers had been reduced ‘to something like a third or a quarter of their weight by the elaborate process of attenuation and hollowing of beams and tines’. No such traces or signs of fastening could be detected on the Sajópetri–Hosszú-dűlő specimen, aside from the possibility that the antler rack may have been removed from the frontlet on purpose.

The shape of the bone object from Sajópetri–Hosszú-dűlő is reminiscent of the head-dress worn by the Celtic god Cernunnos identified by name on the first century ‘Pillar of the Boatmen’ found under Notre-Dame cathedral and now in the Musée de Cluny in Paris (Blonce 2012) (Fig. 8.10). The monument was erected by the guild of the *Nautae Parisiaci* to honour Tiberius and Jupiter. On this votive pillar, Roman and Celtic gods, including Cernunnos, were labelled. The entire word Cernunnos is still visible on eighteenth century drawings of the inscriptions, but the initial ‘C’ has since been eroded.

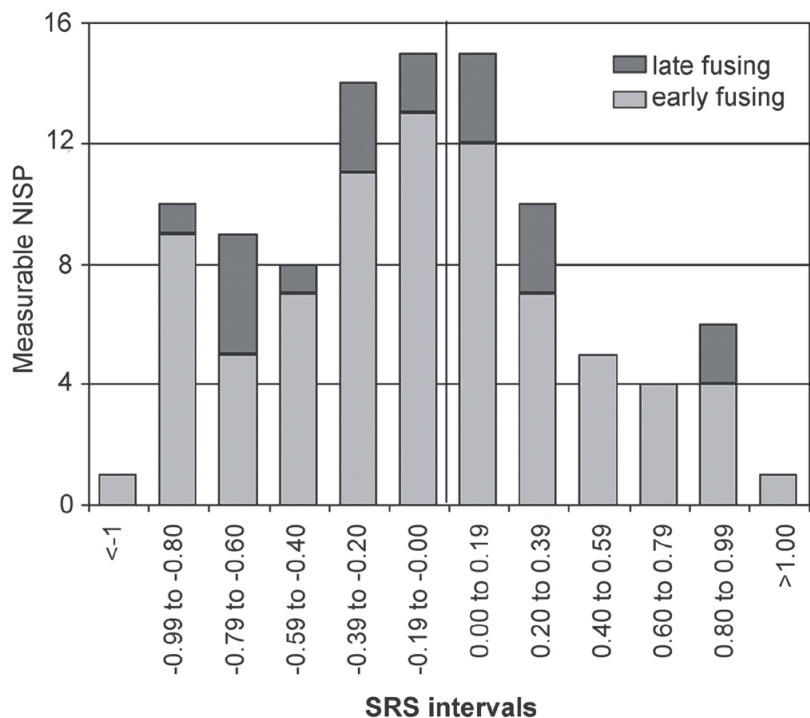


Figure 8.9. The standard scores of red deer bone measurements from Sajópetri–Hosszú-dűlő in relation to the average (0) of Bronze Age red deer in Hungary (drawing: L. Bartosiewicz).



Figure 8.10. Cernunnos on the first century Pillar of the Boatmen in the Musée de Cluny in Paris (source: http://commons.wikimedia.org/wiki/File:Pilier_des_Nautes_Cernunos.jpg).

Otherwise nothing is known of Cernunnos. Details of his exact significance in Celtic religion remain unknown. Unlike other civilisations, the Celts did not worship gods that were half-man half-beast: animal attributes were only there to emphasise a symbolic aspect of the god. Personification may have emerged following Roman conquest. Cernunnos may have been an exception, depicted as a semi-zoomorphic being, possibly a god of the underworld or a shamanic figure, intermediary between the world of the living and the dead, but also connected to nature and animals (Webster 2001, 221).

Similarly antlered images, however, are relatively well-known.

They include a petroglyph showing an antlered human in Val Camonica in Cisalpine Gaul (Petres 1972) and dating between the seventh and fourth century BC. That area was reached by the Celtic expansion around the fourth century BC. Shamanic head-dresses are also recognisable in rock art in Siberia and central Asia. Recent engravings of horned head-gear from the historical period find analogies with similar carvings from Neolithic and Bronze Age sites from the Upper and Lower Lena, Aldan, Olekma and Angara river basins (Devlet 2001, 50).

A widely discussed character probably also inspired by Cernunnos is depicted on an inside plate (no. C 6571) of the Gundestrup cauldron in Jutland, Denmark (Fig. 8.11; Taylor 1992). Recent lead isotope studies (Stos in Nielsen *et al.* 2005, 35) have pointed to Celtic territories in northern France and western Germany as a possible source for the raw material used in making this vessel. Samples of beeswax preserved on the surface were AMS dated to around the fourth to third century cal BC (Grootes in Nielsen *et al.* 2005, 57).

The meaning and broader function of antlers

Antlers are used on head-dresses in many cultures. They may have symbolised a connection with the deer itself and its hunting, especially important in meat provisioning at Sajópetri-Hosszúdűlő. In archaeology, this latter interpretation was first put forward in relation to the Palaeolithic cave painting from the 'Sanctuary' at Les Trois Frères in France (Breuil 1952, fig. 130), the idea being that the head-dress may have served as a decoy. A hunter in disguise could stalk alone or distract the herd by imitating their behaviour, while others ambushed them (Fig. 8.12). Ethnographic analogies are known from across North America (Birket-Smith 1929, 107; Driver 1936, 186; Kroeber 1925, 78; Margolin 1978, 31–2). These observations, however, are

relevant to reindeer (*Rangifer tarandus* L. 1758) and whitetail/mule deer (*Odocoileus* sp.), species significantly smaller than red deer. It is difficult to say how successful stalking red deer would have been with a pair of large and heavy antlers mounted on the hunter's head. In any case, hunting in this manner would have been most profitable during the rut or when stags had lost their antlers (late winter). Antlered males are worth imitating since they dominate stags whose antlers have already been shed (Wallmo 1981, 78).

Antler-decorated head-gear may also have been used to connect with the universe, reaching out into the cosmos like 'antennae'. The hunting connection is also consistent with the observation that most isolated antler finds are remains of hunted animals, with the pedicle and even a portion of the frontal bone still attached. This raises the possibility of seasonal stag sacrifice. The Celtic New Year (*Trinox samoni*) was celebrated in November; in fact, stag antlers are still in top condition after the rut, which falls between late August and the end of October in the territory of Hungary.

Stags are also associated with vitality and power. Ritual antler head-dresses were worn by shamans among the Tungus of north-eastern Tartaria, Siberia (Bowie 2000, 175; Eliade 1964, 13–4; Witsen 1705). Shamans communicate between the living world and the spiritual world. They are seen as powerful individuals within the community and use powerful objects such as bones to communicate with the otherworld. Shamans perform; they alter their consciousness using various techniques, including chanting, dancing and healing to effect a particular outcome, sometimes good and sometimes bad (Reynolds 2013). For the Tungus-speaking culture of the Evenk (from which the word 'shaman' derives) a wide range of materials is employed to effect particular outcomes. One especially powerful material is deer antler, used as medicine, head-dresses and as shamanic devices for communicating with the spiritual and animal worlds. Wearing

antlers, shamans can become deer, imitate their behaviours and movements, experiencing the world as 'deer-people'. The Tungus shaman is said to use antlers in trance, experiencing himself running like a deer to the otherworld. Wearing deer frontlets could be one such way of seeing from another's point of view, since it would facilitate engagement with the world from a different perspective (Viveiros de Castro 1998). Conneller (2004) suggests that the Mesolithic frontlets from Starr Carr were antler head-dresses worn by shamans and hunters as a disguise, or used as part of a costume worn on special occasions, perhaps during important ceremonies.



Figure 8.11. Cernunnos depicted on the inside plate No. C 6571 of the Gundestrup cauldron from Denmark (source: https://commons.wikimedia.org/wiki/File:Detail_of_antlered_figure_on_the_Gundestrup_Cauldron.jpg).



Figure 8.12. Imaginary reconstruction of the way a Palaeolithic reindeer antler decoy might have been used (detail from Wolf and Burian 1987, 116).

Head-gear was an important part of a shaman's costume, frequently decorated with horns and antlers (Devlet 2001, 50). Antlers are associated with a complex set of symbolic attributes, similar to the rest of the shaman's outfit. The very act of dressing up for a special occasion has been around for millennia, regardless

of the time and culture, and head-dresses are used to increase concentration during meditative exercises (Vitebsky 1995). Such head-dresses could also have been part of a disguise, used to trick spirits who cannot effectively attack a shaman wearing a powerful costume, or recognise the shaman without a costume. Shamans in the Altai Mountains region, who wore bands decorated with feathers and shells, were called 'birds' (ЛЪБОВА *et al.* 1988, 175). The inhabitants of the Lower Amur region also put real antlers or their iron copies, often finished off with a bird figure, on their ritual head-gear.

In general, red deer with large antler racks are a pervasive motif in the Siberian part of the Altai by the fifth century BC. The Siberian Ice Maiden, also known as the Princess of Ukok and the Altai Princess of Ochi-Bala, is a 2500 year-old mummy of a woman found in 1993 in a kurgan of the Pazyryk culture in the Republic of Altai, Russia. It was considered to be among the most significant Russian archaeological finds of the late twentieth century.

As well as the sarcophagus with the mummy, six richly saddled and harnessed horses and two warriors were found with her, indicating that the woman came from a noble clan. The Altai Princess and the two warriors are believed to be Pazyryk people, a nomadic group described in the fifth century BC by the Greek historian Herodotus. One of the most distinctive features of the Ice Maiden are her tattoos. She has tattoos on both arms, from her shoulders down to her hands, although only the left arm was preserved well enough to study (Argent 2013, 184). A mythical animal, an antlered deer with the beak of a vulture, is depicted on the shoulder (Fig. 8.13), a stag's head was shown on the left wrist and mythical clashes between vultures and hoofed animals, including a ram, are shown on the forearm. The two warriors found within the same burial were likewise tattooed.

In addition to human antler use, horses depicted with elaborate red deer antlers appear among the tattoos of the elite

man from Pazyryk tomb I. Argent (2013, 186) suggests that these horse–deer hybrids reflect the liminal space between life and death, spiritual and earthly, occupied by horses. Horse 10, buried in the same tomb (c. 300 BC), wore head-gear in the form of a felt model of an antler rack (Руденко 1953, 214–9; pl. lxxi/1). Jacobson (1993, 64–5) sees such head-dresses on horses in tombs as reflections of a predator–prey relationship.

Apart from the putative head-dresses from Star Carr, no British examples or rock-art depictions of deer head-gear have been found. However, the use of antlers as symbols of power and protection in a broader sense was an indispensable attribute of warriors, as is shown by the beginning of stanza LII in ‘The Gododdin’, a poem in Old Welsh (Koch 2003, 348):

‘Enemies quake before his weapon(s), those who will fight against the onslaught of Trin-Tra-Chwardd [the hero who fights while he laughs]. His stag antlers are sharp about the crag of Banncarw’.

In addition to strength and male prowess, antlers may also serve as symbols of plenty and fertility, often in association with water and springs (Deonna 1956, 4). Interpretations of horns and antlers as markers of fertility may therefore point well beyond the simple symbolism of stags representing male virility.

Even during Western Enlightenment, naturalists saw antler and horn growth as analogous to the state of arboreal vegetation, reflecting stark differences between prosperous and barren landscapes. A deer with a multitude of anomalous antlers was documented by Marsigli (1726) in the lush floodplains of the Lower Danube region (Fig. 8.14). On his journey to Lapland, Linné (1732 [1811], 51) observed hornless cattle, contrasting them to sheep in Scania in southern Scandinavia:

‘In some places the cows were without horns; a mere variety of the common kind, and not a distinct species. [...]

A contrary variety is observable, in Scania and other places, in the ram, which has sometimes four, six or eight horns, that part growing luxuriant to excess, like double flowers’.

This environmental analogy has classical predecessors. Herodotus (c. 425 BC [Rawlinson, *ed.* 1885] History vol. 3, book 4, chapter 29) wrote as follows:

‘To me it seems that the cold may [...] be the cause which prevents the oxen in Scythia from having horns. There is a line of Homer’s in the Odyssey which gives a support to my opinion: – Libya too, where horns bud quick on the foreheads of lambkins. He means to say what is quite true, that in warm countries the horns come early. So too in countries where the cold is severe animals either have no horns, or grow them with difficulty.’

For several hunting communities, the fertility of humans and animals, society and species, are thought to be closely linked. These connections can work by analogy, implying that fertility is in principle unlimited, or through some form of recycling of souls, implying that the store of life-force is somehow finite. This may be seen in parts of Siberia, where the breeding of cervids was encouraged through dances and mimes representing their rutting and mating. The emphasis was on the virility of both the human community and the animals on which it depended (Vitebsky 1995, 107).

Antler, an important raw material for making tools and ornaments in prehistory and in later periods, has its own life-like quality. When softened for working by simple soaking in water, even old, shed antler appears to ‘bleed’ as residual blood within the tissue is emitted during the process (Choyke 2010, 24; 2013). Such blood may in itself have been valuable, as ethnography shows: among the Evén of Siberia antlers were cut from live deer and the resultant blood was considered a general tonic (Vitebsky

1995, 101). Well before the coming of the Celts to Sajópetri-Hosszú-dűlő, antler was used to manufacture a variety of objects, such as heavy-duty hammer-adze tools and mattocks, where the weight and especially the shock resilience of antler was particularly important. From time to time, those same tools appear on middle Bronze Age sites in Hungary as highly polished objects with enigmatic and often well-worn incised decoration. They were not used for everyday purposes, but instead incorporated other meanings within the symbolic systems of these communities. By the middle Bronze Age the quality of bone manufacturing declines, while artistic use of antler remains on the rise across Europe (Sofaer *et al.* 2013).

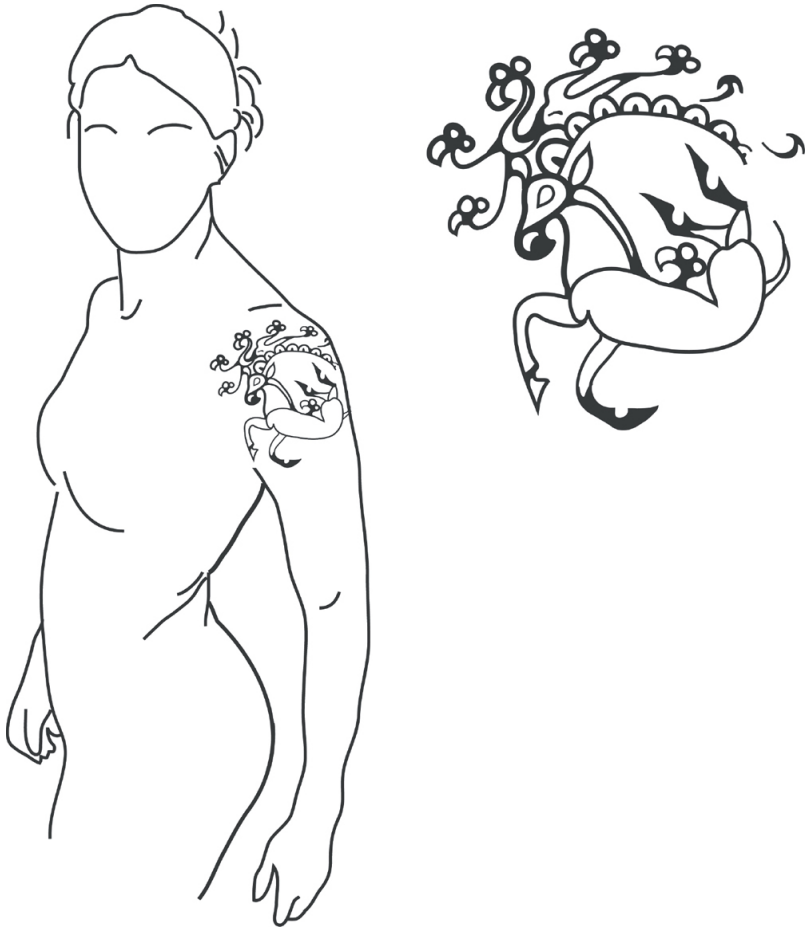


Figure 8.13. Image of a stag tattooed on the left shoulder of the 'Princess of Ukok' 2500 years ago (after Elena Shumakova: <http://siberiantimes.com/culture/others/features/siberian-princess-reveals-her-2500-year-old-tattoos/> Compiled and redrawn by F. Reynolds).

CORNVA DAMÆ MONSTROSA
Naturali Magnitudine

Tom. VI. Tab. XLVII



Figure 8.14. Marsigli's depiction of a 'deer of plenty' (Marsigli 1726).

In addition to the possibility that the Sajópetri–Hosszú-dűlő deer skull served as part of a head-dress, another alternative needs to be considered. The poor preservation of the external surface relative to that of the brain cavity may have been caused by long-term, outdoor display as a trophy. The proximity of the find spot

to a main support post in a simple structure falls in line with this possibility. In addition to Iron Age finds from Hungary, remains of three red deer trophies mounted on poles were also recovered near the middle Bronze Age palisade at the Jászdózsa-Kápolnahalom tell (1700 BC; Choyke 2005). The settlement was located in an ecotone between the Mátra Hills and the Great Hungarian Plain and was a place where masses of unworked red deer antler played an important role in the economy during the periods represented by the upper strata at the tell. Thus, the three Jászdózsa trophies reflected local identification with red deer a millennium before the Iron Age settlement at Sajópetri-Hosszú-dűlő ([Fig. 8.15](#)).

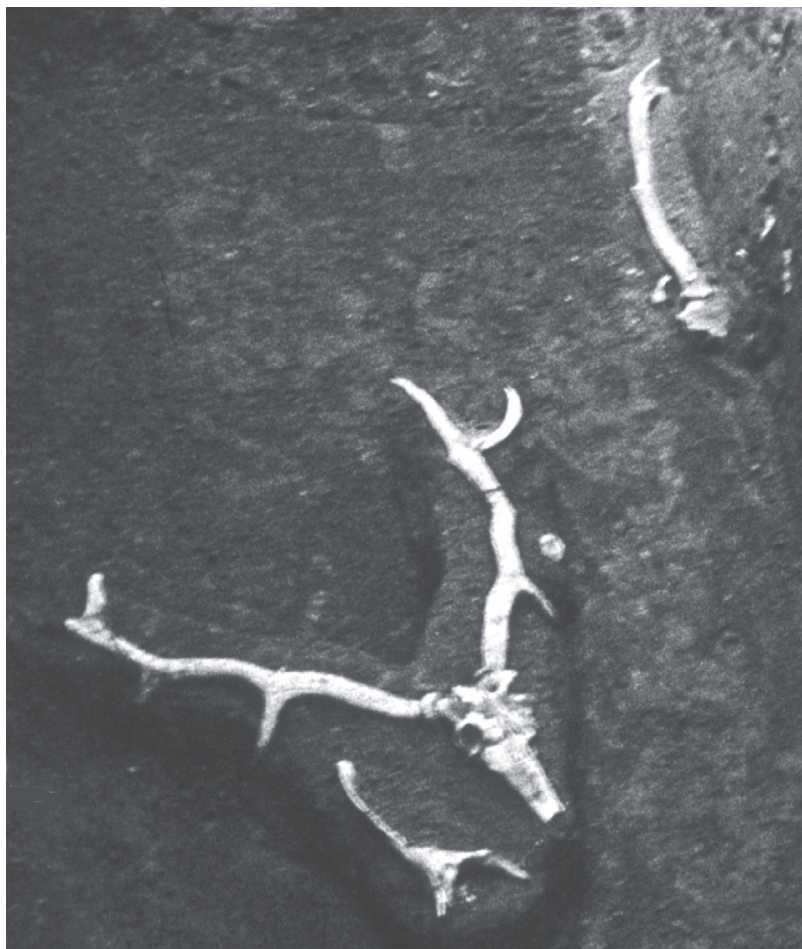


Figure 8.15. Remains of red deer trophies recovered near the middle Bronze Age palisade at Jászdózsza–Kápolnahalom, Hungary (photo: A. M. Choyke).

Conclusions

Based on the archaeozoological context, two different traditions may be represented in the worked antler find from Sajópetri–Hosszú-dűlő. Most of the settlement's food refuse seems to reflect a Scythian steppic tradition (including greater reliance on mutton than on pork and the consumption of horse meat), complemented with local wild resources of which venison was indubitably of greatest importance. Meanwhile, graves in the nearby cemetery of Ludas–Varjú-dűlő were furnished with cuts of pork (Ménies 2006) characteristic of Celtic burials, including those of the La Tène culture in Hungary. Presuming that mortuary rituals are governed by stricter rules than mundane diet, this evidence would link the worked red deer skull fragment to the Celtic cultural side, although stags also frequently occur in Scythian rituals and art (Jacobson 1993). In addition, Scythian iconographic tradition often reflects Hellenistic stylistic influences, thereby contributing to the complexity of the problem in the geographical region where Celtic and Scythian traditions seem to overlap.

A selective diachronic review of antler use between the British Mesolithic and the Siberian ethnographic record shows an unquestionable fascination with deer trophies. On the basis of the examples summarised in this paper, one may thus draw only prudent conclusions concerning the cultural meaning of the rare worked Iron Age stag skull fragment from Sajópetri–Hosszú-dűlő:

•

Food remains providing most of the archaeozoological assemblage from this settlement resemble those of Scythian settlements (sheep, horse)

•

A special feature of this site, however, is that red deer also contributed significantly to the meat diet

•

Similarly to domesticates not bred for meat (horse and dog), mostly mature red deer were exploited

•

Individual bone measurements of red deer fit within the size range of earlier, Bronze Age red deer from Hungary

•

The economic importance of this game apparently concurred with its spiritual meaning

The exact function of the unique stag frontlet could not be unambiguously identified. The carefully carved piece may have served as a ritual shamanic head-dress or as external decoration, as shown by its heavily weathered surface.

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Towards an integrated
bioarchaeological perspective on the
central European Neolithic:
understanding the pace and rhythm
of social processes through
comparative discussion of the
western loess belt and Alpine
foreland

Amy Bogaard, Stefanie Jacomet and Jörg Schibler

Introduction

Alasdair Whittle's work on Neolithic Europe has resisted characterisation of early farming as monolithic, conservative and unchanging, highlighting instead its mutability and fundamentally social nature. His research also pays close attention to the importance of chronology for understanding the pace and rhythm of social processes during the Neolithic. In this paper we seek to illustrate the *contrasting* opportunities afforded by different central European landscapes to infer the 'temporality' of Neolithic

subsistence practice (cf. Ingold 1993): the nature of the activities involved, their rhythm and development through time, their social and wider ecological implications. The central European loess belt has generated large faunal and botanical assemblages that shed light on the farming and herding practices of the Early Neolithic *Linearbandkeramik* (LBK) and later complexes (Fig. 9.1), but often with relatively poor chronological resolution (e.g. to the nearest one or two centuries at best) due to a combination of limited radiocarbon dating on short-lived materials, the shape of the calibration curve, the scarcity of dendrochronologically dated LBK wells and reliance on relative chronology (e.g. Stöckli 2005; Weninger *et al.* 2001). Moreover, plant remains on dryland sites are normally preserved only by charring, and faunal assemblages are very poorly preserved where soils are acidic (Bogucki 1984, 51; Kreuz 2007; 2012). By contrast, the lakeshore sites of the Alpine foreland offer ‘continuous’ preservation of organic detritus in waterlogged, neutral or alkaline conditions within dendrochronologically dated occupation sequences in which the duration of phases is often on the order of 20 years or less (see e.g. Billamboz 2014; Bleicher 2009; Bleicher *et al.* 2013). Furthermore, dendrochronological dating makes it possible to recognise and distinguish periods with continuous archaeological data from periods of 100 to 300 years with few to no data (Billamboz 2014). Beyond such contrasts in taphonomy and chronological resolution, the loess belt and Alpine foreland also presented different ecological and climatic parameters for Neolithic communities (Fig. 9.2).

Our aim here is to disentangle the contrasting potentials of these archaeological records for the inference of Neolithic subsistence practice *per se*, on the one hand, and the systems of farming and herding that can be inferred from the bioarchaeological evidence, on the other. We suggest that in many important respects the two forms of archaeology are not directly comparable, because preservation forms, stratigraphical sequences

and archaeological features are of a different nature in each area, and so lend themselves to different forms and scales of insight. Moreover, there are significant ways in which subsistence practice – especially foraging and hunting activities – appear to have varied between as well as within these regions. Nevertheless, there are also salient points of *convergence*, including the maintenance of long-lived arable plots (Bogaard 2004; 2011b; Brombacher and Jacomet 1997; Hosch and Jacomet 2004; Jacomet *et al.* 2016) and an initially restricted scale of herding followed by expansion in the later Neolithic (e.g. Kreuz *et al.* 2014; Schibler 1997; 2006; Schibler *et al.* 1997a) (Fig. 9.3). There are important opportunities, therefore, to interpret the Neolithic bioarchaeological records of ‘dryland’ and ‘wetland’ central Europe as *complementary* perspectives on parallel social and ecological trajectories (see also Hofmann *et al.* 2016).

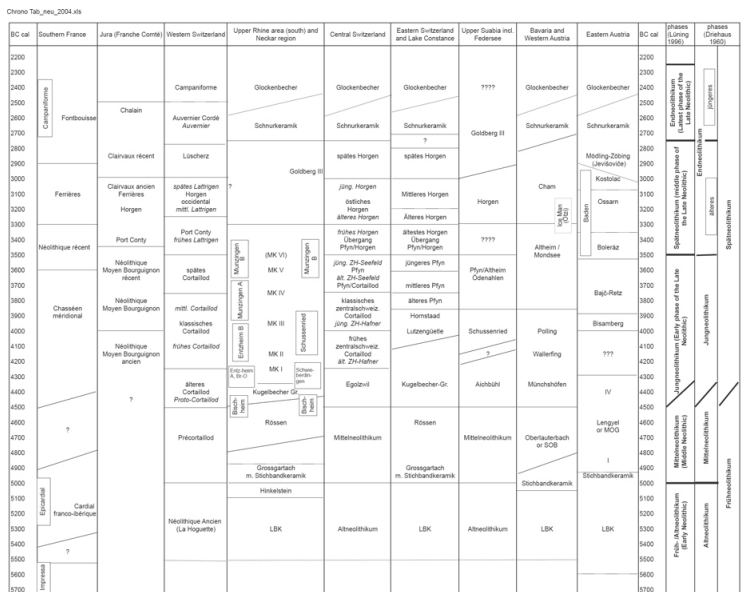


Figure 9.1. Chronology table with the cultural groups mentioned in the text. All dates are calibrated ^{14}C or dendrochronological dates. Abbreviations: MK = Michelsberg culture; LBK = Linearbandkeramik; SOB = Südostbayerisches Mittelneolithikum (south-east Bavarian

middle Neolithic); Br-O = Brubach Oberbergen (from Jacomet 2007, citations of archaeological literature see there).

Problems of comparison between the loess belt and Alpine foreland

The Neolithic archaeology of the western loess belt and of the Alpine foreland differs in a number of significant ways: preservation/taphonomy, the types of archaeological feature encountered, chronological resolution, quantitative and interpretive methods, and palaeoecological setting. We review each of these aspects in order to assess their implications and to frame subsequent comparison between the two regions in terms of farming and herding practices.

1. Preservation/taphonomy

Bioarchaeological remains of flora, fauna and humans on Neolithic sites in the loess belt are normally preserved under aerobic soil conditions; only certain deposits in Neolithic well shafts have yielded significant waterlogged plant remains (Herbig *et al.* 2013; Knörzer 1998; Zerl and Herbig 2012; [Table 9.1](#)). Under aerobic conditions plant material is most widely preserved by charring; that is, heating to a certain range of temperatures (c. 230–300°C) under oxygen-poor conditions, combined with a lack of mechanical disturbance such that friable charred grains, seeds and chaff items are left morphologically intact and identifiable (Boardman and Jones 1990; Braadbaart 2008; Braadbaart *et al.* 2005; Charles *et al.* 2015; Jacomet *et al.* 2002; Märkle and Rösch 2003). While mineralisation and other minor preservation forms can also occur in aerobic soils, charred plant remains constitute the vast majority of archaeobotanical material on Neolithic sites across the loess belt.

It has long been appreciated that charred plant assemblages

are biased in favour of plants kept in long-term storage throughout the year and processed on a regular basis, as well as of fuel residues (which may include the by-products of processing; e.g. Jacomet 2013; Van der Veen 2007; Willerding 1991). Charred assemblages are often dominated by crop-derived material, and may also contain traces of the weed flora harvested with crops and associated with stored crops and/or their processing by-products (Van der Veen 2007).

Waterlogged assemblages, by contrast, can reflect *in situ* vegetation and/or more short-term plant use. Thus, waterlogged organic layers on lakeshore sites, where anaerobic conditions are created by permanent water saturation subsequent to deposition, have yielded a wealth of evidence for seasonal wild plant use, as well as for oil-seed crops, such as opium poppy and flax, which are poorly preserved by charring (see e.g. Jacomet *et al.* 1989, 115; 2004; Steiner *et al.* 2015). It is clear, therefore, that charred and waterlogged archaeobotanical records offer quite distinct windows onto ancient plant use and deposition, a contention also borne out by comparison of Neolithic waterlogged well assemblages with charred assemblages in the loess belt, discussed further below (Jacomet 2013).

Table 9.1. Comparison of dryland sites and waterlogged well fills of different LBK sites.

	<i>Dry sites (charred)*</i>	<i>Wells (subfossil)**</i>
<i>Cereals:</i>		
Taxa	Hulled wheat predominant	Hulled wheat predominant; also barley and hexaploid f-t wheat
Plant parts	Mostly chaff	Mostly chaff
Ubiquity	High	High
Density (items/ litre sediment)	Low; occasional concentrations of grain and/or chaff	Moderate-high
<i>Pulses:</i>		
Taxa	Lentil, pea	Lentil, pea
Plant parts	Seeds	Seeds, pods
Ubiquity	Moderate	Moderate
Density (items/ litre sediment)	Low; occasional concentrations	Low
<i>Oil-seed crops:</i>		
Taxa	Flax, poppy	Flax, poppy
Plant parts	Seeds	Flax seeds, capsules and stems
Ubiquity	Moderate	High
Density (items/ litre sediment)	Low	Moderate-high
<i>Collected plants:</i>		
Taxa	Chenopod, hazelnut, strawberry, <i>Malus</i> , <i>Prunus</i> , <i>Rubus</i> , <i>Sambucus</i> etc	Broad range but variable per well
Plant parts	Seeds, nutshell	Seeds, nutshell
Ubiquity	Low to moderate	High
Density (items/ litre sediment)	Low; occasional 'stores' of chenopod and brome grass	Low to high
<i>Other wild plants:</i>		
	Mostly arable weeds; ≤50 taxa for well sampled site	Usually >140 taxa per well

(based on * Bogaard 2011b; Kreuz 2012 and ** Knörzer 1998; Herbig et al. 2013). F-t = free-threshing

Nevertheless, it is possible to compare *charred* plant assemblages from loess belt and lakeshore sites, and this strategy

has been employed to address specific questions pertaining to ancient weed flora, for example (e.g. Bogaard 2002; 2004). Equally, comparison of waterlogged well assemblages from the loess belt with waterlogged lakeshore site organic layers offers a basis for assessing the spectrum of *in situ* and/or collected vegetation (for food, fodder etc.; Herbig *et al.* 2013; Jacomet 2013; Zerl and Herbig 2012). We consider what such comparisons yield further below with regard to Neolithic cultivation and foraging.

As regards faunal remains, lakeshore sites offer ideal preservation conditions with high pH and anaerobic preservation of biomolecular components (collagen, organic residues; Spangenberg *et al.* 2014), but with less favourable conditions for genetic preservation because of the water-saturated environment (Schlumbaum and Edwards 2013). By contrast, loess belt sites vary in soil pH: if loess is thin and soils are acidic, faunal remains are poorly preserved or absent, as in the Rhineland for example (Bogucki 1984, 53), whereas thick loess and/or clay-rich substrates can yield very well preserved remains with good biomolecular potential, as at Vaihingen in Baden-Württemberg (e.g. Fraser *et al.* 2013; Schäfer 2010).

In waterlogged sites there are occasional layers that have dried out due to lowering of the water table caused by later construction works (e.g. Lake Zug in the sixteenth century AD), but this is only rarely the case. In layers that were originally waterlogged but have subsequently dried out, bones decompose completely (as do uncharred plant remains) within 400 years, leaving only teeth. For the waterlogged sites of Zurich (AKAD-J) and Arbon Bleiche 3 there has been an attempt to estimate the proportion of originally deposited animal bones that is actually preserved (Deschler-Erb and Marti-Grädel 2004; Schibler *et al.* 1997c). The procedure can be summarised as follows:

- 1.

Calculation of MNI for the most important species together with information on the age of the individuals

2.

Calculation of total 'Neolithic' live weight: MNI multiplied by estimated body weight of the different species considering three age stages (infant, juvenile, adult)

3.

Calculation of 'actual' live weight: total bone weight is around 7–10% of the body weight (bone weight multiplied by 10–14.3)

4.

Calculation $3 \times 100 / \text{Calculation 2} = \text{percentage of total live weight represented by the bone assemblage}$

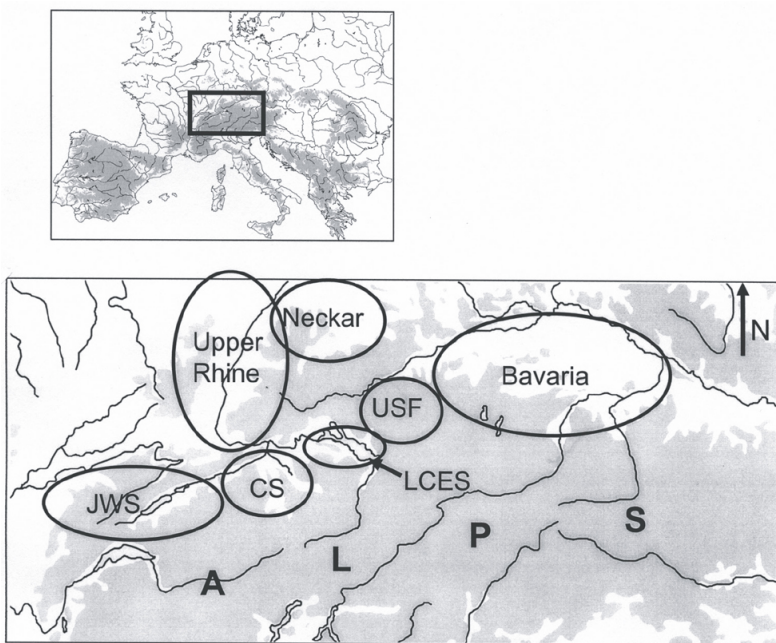


Figure 9.2. Map of the area considered in this paper, with location of the regions mentioned. JWS = Jura and western Switzerland; CS = central Switzerland; LCES = Lake Constance and eastern Switzerland; USF = Upper Swabia and Federsee. From Jacomet (2006).

In waterlogged conditions the results for the Zurich sites

suggest that only around 2–3% of the animal bones that could potentially be found in the archaeological layer were actually found on the excavation. In Arbon Bleiche 3, with its extraordinary quality of preservation of one undisturbed layer (Leuzinger 2000), around 10% of originally deposited animal bones were actually preserved. As a consequence, even under the ‘best quality’ waterlogged conditions, at least 90–98% of the animal bones that might be found are lost. The implication is that on dryland sites the preservation of animal bones is likely less and the bone loss is more than 99%.

2. Different types of archaeological feature

The stratigraphic archaeological records of the loess belt and lakeshore sites are fundamentally different due to a combination of preservation conditions and landscape context. Loess belt sites are vulnerable to erosion due to post-Neolithic land use, particularly from the Iron Age onwards (e.g. Lang 2003). As regions of fertile agricultural soils, loess areas are affected by centuries of ploughing and thus severe truncation of Neolithic occupation horizons. With very few exceptions (e.g. Meixner 1998) the only archaeological features preserved are therefore pits, postholes and other ‘negative’ features. While some pit fills contain multiple depositional layers, the occupational surfaces and floor occupation layers preserved on other types of ‘dry’ site (such as the tell sites of south-eastern Europe and western Asia) are lacking for the Neolithic of the loess belt.

On lakeshore sites of the Alpine foreland, by contrast, a form of ‘continuous’ preservation occurs in which build-up of detritus on wooden floors and/or below floors on the lake bed or wetland surface is preserved through waterlogging. How exactly these layers were formed is still highly debated (and the subject of the current SNF project CR30I2_149679_1 at IPAS). In such contexts postholes can also occur, and usually the posts are still preserved

(see for example Bleicher and Harb 2015; Dieckmann *et al.* 2006; Leuzinger 2000). Even if occupation layers were eroded, wooden posts allow dendrochronological dating and therefore the reconstruction of occupation history is possible. Pits are rare or lacking but examples of middens containing plant and animal remains, cooking stones and fragments of pots and tools are known from several sites (AKAD J, Arbon Bleiche 3, St. Blaise, Zurich Parkhaus Opéra: Bleicher and Harb 2015; Jacomet and Schibler 1985; Jacomet *et al.* 2004). Lakeshore site formation, therefore, lends itself to spatial investigation of activity areas within, under and among houses; for plants and small animal remains the prerequisite is that sampling is appropriate. Refitting analyses of animal bones and artefacts support the hypothesis that such remains were the refuse of a single house because the spread of refitting fragments is only about 1–2m (e.g. Arbon Bleiche 3, Torwiesen, Zurich Parkhaus Opéra layer 13; see contributions in Antolin *et al.* 2016; Jacomet *et al.* 2004; Maier and Harwath 2011; for sampling strategies see Jacomet and Brombacher 2005). Thus, high-resolution spatial studies are possible on lakeshore sites in a way that is excluded on loess belt sites. Nevertheless, the negative features (pit fills etc.) of loess belt sites can reflect broader spatial patterning, such as differences in artefactual, faunal and/or botanical deposition between households, neighbourhoods and/or building phases (e.g. Bogaard *et al.* 2011; Hachem 2000).

A broad implication of these stratigraphic contrasts is that there is severe loss of information on loess belt sites, both because waterlogging is restricted to rare well deposits, resulting in exclusive preservation of plants by charring (with associated biases) and because occupation layers are lacking. Even where archaeological features can be closely dated (e.g. through Bayesian modelling of stratigraphic sequences, see below), absolute numbers of faunal remains and charred seeds from the fills of negative features on loess belt sites radically underrepresent their original abundance in a given occupation phase due to the lack of

intact floors and living surfaces with associated debris (see above).

A final point of comparison in terms of archaeological features on loess belt versus lakeshore sites concerns human burials. Lakeshore sites have yielded occasional ‘stray’ human material, but mortuary practices (e.g. siting of burial grounds away from the lakeshore) clearly prevented accumulation of human remains in settlement areas (Moinat and Stöckli 1995). Neolithic settlements in the loess belt, by contrast, often include human burials near houses, in enclosure ditches and/or in adjacent cemeteries. As regards subsistence practices, this contrast in associated burial evidence has major implications for palaeodietary approaches, for example stable isotope-based assessment in the loess belt (e.g. Fraser *et al.* 2013) versus estimation based on absolute quantities of resources in waterlogged detritus layers (Ebersbach 2003; Gross *et al.* 1990). The latter works, however, likely underestimated Neolithic crop yields, and so alternative models need to be designed (see e.g. Antolin *et al.* 2016).

3. Dating/resolution¹

The Neolithic archaeology of the loess belt has yielded detailed relative chronologies (e.g. Kerig 2005; Strien 2000) and LBK wells provide sporadic dendrochronological sequences (Stöckli 2005, fig. 1). Strien and Gronenborn (2005), for example, linked the two in order to assess the relevance of palaeoecological proxy data for climate change to shifts in LBK material culture. But while the detailed seriation sequences and relative dating frameworks available for the LBK in particular facilitate a pseudo-historical narrative of site occupation sequences, radiocarbon chronologies for the LBK and subsequent complexes of the loess belt remain broad frameworks; there are as yet no precise radiocarbon chronologies for LBK stratigraphic sequences refined using Bayesian modelling to assess the use-lives of longhouses, enclosures and so on (cf. Whittle 2012) and no suggested calendar

of events in real time (cf. Bayliss and Whittle 2015). Alasdair Whittle's ongoing *The times of their lives* project encompasses LBK and later sites in Alsace and the Michelsberg enclosure at Heilbronn-Klingenbergl (www.totl.eu), with the aim of producing more refined chronologies comparable to the work on British Neolithic enclosures (Whittle *et al.* 2011). The latter showed that causewayed enclosures date to a specific time horizon (thirty-eighth to mid-thirty-sixth century BC) within the British early Neolithic and reveal, much like the high-resolution dendrochronologies of the Alpine foreland (see below), the shorter time scales at play within the broad chronological frameworks of the Neolithic.

Dendrochronological dating was established in the northern Alpine lakeshore area in the 1980s (for a research historical overview see Bleicher 2013a). Since then, many of the lakeshore settlements were absolutely dated (see Billamboz 2014 for an overview of the dendrochronologically dated phases at Lake Constance). There are rather long phases with uninterrupted settlement activities on the lakeshores, beginning around 3930 BC. But there are also some phases where no settlements existed there (as in the decades around 3750 BC, between 3500 and 3400 BC, around 2950 BC, between 2800 and 2700 BC); the reasons for this are not clear.

In the 1990s, studies centred purely on dating were increasingly replaced by a dendro-archaeological approach (see e.g. Billamboz 2003). The latter includes a reconstruction of forest use systems (e.g. Billamboz and Köninger 2008) and the internal structure of the villages and their building histories (e.g. Billamboz 2006; Sormaz 2004). By analysing large amounts of wood from the lakeshore villages it became clear that settlement patterns were dynamic: phases were usually short (mostly 5–17 years). This highly dynamic rhythm of settlement continues until the end of the lakeshore settlement period, as an overview of the settlement dynamics in south-west Germany and Switzerland shows (Bleicher

2009, 144–52).

Only exceptionally are longer settlement durations documented, evidenced by on-going maintenance of the houses. During the Pfyn culture, settlement phases of over 30 years are documented in Zurich (AKAD layer J2, around 3720 BC). In the western part of Switzerland there are also some much longer settlement phases around 3800 BC, as at Concise-sous-Colachoz (75 years). Such longer settlement phases occur also after 3000 BC, in the late Horgen culture in the bay of Sipplingen (Osthafen) on Lake Constance (more than 60 years; see Billamboz and Königer 2008, 331; Bleicher 2009, 149–51). Some longer settlement phases are also documented from around 2660 BC in settlements at Lake Biel (Suter and Francuz 2010).

Usually, a whole village was not built at once (see e.g. the settlement history of Arbon Bleiche 3 (Sormaz 2004)). Amongst others, Torwiesen 2, a Horgen culture settlement in the Federsee region, provides a clear demonstration. Here, the first house was built in 3283 BC; two years later, most of the other houses of the settlement were built, and during the following two years additional, mostly small houses were erected (Bleicher 2009). The location of a house within a settlement seems not to be random; the dating shows that for instance empty spaces were left for ‘latecomers’. In Torwiesen 2 there are no traces of house repairs, and the whole settlement existed for as little as five years. Other settlements in the same region existed for somewhat longer periods, but more than 20 years is rather exceptional during the Horgen and Goldberg III cultures; in such longer-lived settlements house repairs are visible. The settlements move around between two settlement zones or ‘*Siedlungskammern*’ in a ten-year rhythm (Bleicher and Herbig 2010, 98–9). The precise dating of the houses opens up the possibility that special pioneer or house building groups existed that explored and occupied the new sites and prepared the landscape for agro-pastoral activities, partly through burning (Jacomet *et al.* 2016).

Woodland management is also very well documented (see Billamboz 2014; Billamboz and Köninger 2008). In some phases, mature forest was used for gathering timber, in many cases secondary forests. Bleicher (2009) has inferred ten-year cycles of woodland management, such as coppicing, in the Oberschwaben region.

We are still far from having fully reconstructed the dynamics of settlement in the lake dwelling area around the Alps, but many ongoing analyses, for example currently in the Zurich region (Bleicher *et al.* 2013), show the same trends as summarised above. In future, settlement histories will become even more detailed.

4. Quantitative and interpretative methods

On dry sites in the loess belt, relative proportions of animal and plant taxa can be used to characterise land use strategies, but the *absolute* scale of exploitation can usually only be inferred indirectly (e.g. through inferences on the form and intensity of arable land management, or through the ecological requirements of exploited taxa, e.g. Bogaard 2004; Halstead 1989). A more direct approach may be possible if quantifiable dietary inputs are reconstructed through stable isotope analysis of human/faunal/plant ‘food webs’ (cf. Fraser *et al.* 2013).

By contrast, precise dendrochronological dating of occupation layers on Neolithic wetland sites in the Alpine foreland provide an opportunity to gain detailed insight into absolute levels of animal and plant exploitation. It is, however, easier to do such quantification for animal bones. Concerning the scale of livestock herding it is possible – especially for the sites of the Zurich region – to include, alongside conventional zooarchaeological parameters such as percentage values of different faunal taxa, another method of quantification: the calculation of the number of bone fragments per square metre and settlement phase, i.e. density values (see Schibler *et al.* 1997a; Schibler and Jacomet 2010; Fig. 9.3). The

values thus obtained, however, are not entirely accurate because the dendrochronologically dated settlement phases vary, mostly from ten to 20 years in duration. Small differences among these values should, therefore, not be considered significant. The real advantage of this quantification method lies in the fact that, in contrast to percentages based on the number of bone fragments, the densities are absolute rather than relative measures of abundance.

BC	domestic animals	wild animals
2500		
2750		
2900	?	?
3250		
3350	?	?
3660		
3850		
4200		
4300		

Figure 9.3. Importance of domestic and wild animals in Neolithic lakeshore settlements of central and eastern Switzerland. Lozenges represent the wild animal species not shown individually. For chronological development (vertical direction), find densities (number of bone fragments per square metre and settlement phase) are used.

For a time period (horizontal direction), mean values of the percentages (100%: number of all identifiable bone fragments) for the different species are used. For the quantification method of find densities see Schibler (1997, 60) (© IPNA, Basel University).

On the basis of these faunal densities it is possible to assess whether herding or hunting levels increase or decrease in *absolute* terms. Percentages, by contrast, are of course relative values that influence one another. For example, many LBK faunal assemblages contain high percentages of cattle (e.g. 60–80%) on the basis of bone fragment numbers (Arbogast *et al.* 2001, database), but the actual scale of cattle keeping cannot be inferred directly from their abundance. In the lake dwelling stratigraphy of Zurich we start with low densities of cattle bones (less than one bone per square metre) before 4000 BC (Fig. 9.3). After 3750 we have density values of 1–2 and after 2750 BC we have values of 2–8 bones. This is an absolute indication that cattle herd sizes grew over time. With increasing percentages (e.g. 20%, 40%, 60% of cattle bones), it would only be possible to estimate that there were more cattle than other species, but any change in actual cattle herd sizes would be unclear. Other species like pigs or sheep and goat had decreasing importance and therefore it looks like cattle had increasing importance. We will consider specific examples of this problem further below.

Turning to methods for assessing the role of different plants on lakeshore sites, it is much more difficult to estimate their absolute importance on the basis of absolute find numbers per settlement phase and layer volume. In any case, such comparisons would necessitate calculation of proportions based on the plants' 'Thousand Grain Weight' (see e.g. Hosch and Jacomet 2004); however, such values could be misleading because there is no simple way to account for different plant parts in the quantification. In another paper (Antolin *et al.* 2016) we compared different calculation methods for a recently excavated settlement,

layer 13 at Parkhaus Opéra, Zurich (dated to the Horgen culture and existing around 20 years, from 3177 to 3157 BC). For 16 houses, the absolute number of fruits per house was extrapolated from the average density of remains per litre of sediment per square metre. It could be shown that calculation of an average density per layer has major drawbacks if we want to compare the importance of (in our case) wild fruits per house. More reliable results are gathered by extrapolation of the total amount of fruits per house; this calculation includes the total volume of sediment per house. Unfortunately, this settlement is the only one where such calculations were possible thanks to very dense surface sampling.

5. Vegetation, climate and soils

The loess lowlands of the Atlantic period were covered by mixed oak woodland formations. These were likely more open than recent beech-dominated forests, particularly in floodplains and along stream courses, which offered important zones for animal grazing (Kreuz 2008; 2012, 57–77). Early LBK settlement in the lowlands of central Europe was concentrated in what are now relatively dry regions (c. 600mm annual rainfall and average annual temperatures of c. 7–9°C); in subsequent phases of the LBK (Flomborn phase onwards) settlement spread to areas of wetter, more Atlantic climate, such as the Lower Rhine (Kreuz 2012, 56). Pollen data from low mountain areas in central Germany (*Mittelgebirge*) register the occurrence of ivy, mistletoe and holly during the later sixth millennium, suggesting that winter and summer temperatures there and likely also in the loess lowlands were 1–2°C warmer than today (Kreuz 2012, 53). A series of proxy records document climatic oscillations in central Europe during the early Neolithic, with cool/wet phases of relatively high precipitation, probably in the form of intensive rainfall, cooler summers and a shorter growing season (e.g. Haas *et al.* 1998; Kalis

et al. 2003; Magny 2004; Magny and Bégeot 2004; Magny and Richoz 1998; Magny *et al.* 2001).

The transition from the late Atlantic period to the sub-Boreal in the early fourth millennium BC coincides with the disappearance of mistletoe pollen in the *Mittelgebirge*, consistent with a decrease in summer temperatures; ivy and holly decline in the middle sub-Boreal, suggesting reduction in winter temperatures (see references in Kreuz *et al.* 2014). These pollen records provide a local instance of widely documented temperature decline in the middle Holocene in northern and central Europe (Wanner *et al.* 2008).

The nature of soils in the loess belt of central Europe is a matter of debate (see e.g. Eckmeier *et al.* 2007). However, it is certain that in very dry regions, such as parts of the Wetterau, there were very fertile chernozems that developed naturally on a small scale (Prof. H. Thiemeyer, Frankfurt, *pers. comm.*). If luvisols then later developed out of those, or developed directly on loess in less dry regions is unclear. The latter option is also suggested by some researchers (Brönnimann and Rentzel in prep.). To summarise, one can state that soils in the loess landscapes were fertile and well suited for agriculture, but that chernozem development was likely limited.

Moving to the surroundings of the Alps, the overall development of vegetation during the Holocene is well established (Burga and Perret 1998 offer an overview for Switzerland). During the later Atlantic period, when the lakeshore settlements began, mixed oak woodland was beginning to be replaced by beech woodland. The shade-tolerant silver fir (*Abies alba*) had already spread in some regions during the Atlantic. During the sub-Boreal, beech-and silver fir-rich forests dominate. There were, however, rather large differences between the micro-regions due to local contrasts in topography and climate. For example, oak woodland dominated in the relatively dry and warm conditions of the southern slopes of the Jura.

As regards climate, conditions in the Alpine foreland (and even more so in the Alps proper) are much more complicated than in the flat loess areas. There is much more relief, and climate can vary considerably from one place to the other, even over short distances (Kirchhofer 2000). The southern slopes of mountainous areas or inner-Alpine valleys (like the Valais) tend to be much warmer than surrounding regions, and precipitation is often much lower (today this is visible in the distribution of vineyards). Lakes have a large influence on their surrounding regions, depending on their size (climate tends to be milder, the larger the lake). In addition, there is an altitudinal gradient. To conclude, there is no single climate in the Alpine region; rather, there are many. Reconstructions of climate influence, therefore, might be of local relevance only. This variability makes the discussion of climatic impact on late Neolithic people's lives (and economies) challenging, and discussion of this topic is controversial (see e.g. recently Bleicher 2011; Nicolussi *et al.* 2013).

In the morainic landscape of the northern Alpine foreland, luvisols developed during the first half of the Holocene. These were probably not very different in quality from those on the loess; very poor soils mostly developed on siliceous bedrock, often at higher altitudes (Peyer and Frei 1992; Eidgenössische Forschungsanstalt für Agrarökologie und Landbau 1981 ff.). In terms of soil fertility, therefore, luvisols on *Jungmoräne* were probably comparable to those that developed on loess. Thus, it is not justifiable to contrast 'rich' soils on the loess and 'poor' soils in the Alpine foreland. In terms of erosion, it is plausible that layers in mountainous areas are more prone to erosion than in flat areas, though even in the relatively flat loess landscapes of the Neolithic erosion is well documented, beginning in late prehistory (e.g. Lang 2003).

In general, it is clear that Neolithic agricultural systems in Europe were certainly not safeguarded from a wide range of negative impact factors, one of which could be climate. As stable

isotope analysis of human bones or modelling of quantitative archaeobiological analysis (Ebersbach 2003; Fraser *et al.* 2013; Gross *et al.* 1990; Oelze *et al.* 2010; Schibler and Jacomet 2010) have shown, cereals likely constituted an important part of the diet. Therefore, negative impacts on cereal fields, yields or stored crops would have had an important impact on Neolithic nutrition supply. Such negative impacts could include conflagration of houses or settlements containing cereal stores, pests (fungal, herbal or faunal) or short-term climatic deterioration. In this context the term 'climate' would be better termed 'weather'. Also, an overexploitation of an area over decades could lead to reduction in yields, or other problems such as shortage of timber or over-grazing (e.g. Billamboz 2014). All of these factors, and undoubtedly a host of others, could have influenced the Neolithic economy and nutrition.

Debate is ongoing as to the comparative impact of climatic fluctuations near the Alps versus the loess belt. We will come back to this in the discussion. But it is clear that – if we want to reconstruct climatic influence on Neolithic societies – we need very precise dating. Otherwise, very short-term fluctuations cannot be connected with potential consequences in faunal and botanical spectra. For Neolithic dryland sites chronological precision is mostly too poor to identify short climatic deteriorations. Geographically, certain settlement areas exist where climatic conditions fluctuate only within a small range (e.g. loess areas settled during the early LBK) and therefore negative impacts caused by weather conditions are more unlikely than in other regions, such as those in the surroundings of the Alps. Moreover, the intensity, quality and frequency of negative impacts on cereal production and nutrition quality incorporate a range of different factors that influence the intensity of wild resource use.

Neolithic farming and herding in the loess

belt

LBK farming practices and landscapes are some of the most intensively studied in Neolithic Europe (e.g. Bakels 1978; Bogaard 2004; 2011b; Knörzer 1971; 1997; Kreuz 1990; 2007; 2012). The major crop repertoire of the early Neolithic LBK complex (c. 5500/5400–5000/4900 BC; [Fig. 9.1](#)) is well documented and centres around the hulled wheats einkorn and emmer (along with a third morphotype, the ‘new type’ hulled wheat described by Bogaard 2011b, 87–9; Jones *et al.* 2000; Kreuz *et al.* 2005), two pulse crops, lentil and pea, and two oil seed crops, flax/linseed and poppy (the latter is best represented in waterlogged well deposits, see [Table 9.1](#)). Of these well attested crops, opium poppy is introduced from the central/west Mediterranean in the Flomborn phase (Bogaard 2011b; Kreuz *et al.* 2005). Additionally, rare occurrences of other crops arguably broadened the crop spectrum in certain LBK phases and/or regions, but while some of these are proven to be LBK in origin through AMS dating (e.g. bitter vetch in the later LBK, Kreuz 2012; [Table 9.1](#)), other finds are now known to be intrusive (such as LBK millet finds, Motuzaite-Matuzeviciute *et al.* 2013; or intrusive barley and other crops in a small number of features at Vaihingen, Bogaard 2011b, 58) or are not directly dated. Available AMS dating has thus served to reinforce the observation that the LBK crop spectrum was restricted in comparison to that known from south-eastern and more generally southern Europe, where barley and free-threshing wheat are attested alongside additional pulse crops (Bogaard *et al.* 2007; Kreuz *et al.* 2005; 2012, table 9). Collected plants are regularly encountered on LBK sites at low levels, with occasional concentrations of the annual ruderal/weed fat hen (*Chenopodium album*) and *Bromus* species; waterlogged well deposits reflect a broader range of collected taxa but also marked variability in their occurrence between deposits ([Table 9.1](#)).

The weed flora accompanying LBK crop remains excludes shifting cultivation and suggests variable levels of management

intensity (Bogaard 2002; Bogaard *et al.* 2015; Kreuz 2012). Some of this variation relates at a local site level to differences in agricultural practice between groups of neighbouring longhouses (Bogaard *et al.* 2011). Stable isotope analysis of LBK plant remains from Vaihingen is consistent with moderate manuring levels (and excludes long-term cultivation without any manuring) and also with mixed cultivation of hulled wheat species as ‘maslin’ crops (Fraser *et al.* 2013). Increasing frequencies of relatively low-growing weeds during the LBK may point to a shift from ear to sickle harvesting (Kreuz *et al.* 2005). The general rarity of cereal straw nodes, together with close analysis of weed heights in the large assemblage from Vaihingen (Bogaard 2011b, 158–62), suggest that cereals were cut well above ground level, and hence that straw collection was not prioritised.

In the fifth millennium BC, free-threshing wheat and barley were added to the cereal repertoire of the Rössen, Bischheim and Michelsberg complexes in the loess region (see references in Kreuz *et al.* 2014). Recent synthesis by Kreuz *et al.* (2014) of Michelsberg land use suggests a distinctive focus on this expanded cereal repertoire, less emphasis on pulses than in the LBK and a lack of oil-seed crop cultivation. Despite indications of climatic deterioration during this phase (see above), there is no evidence in the available *charred* plant assemblages for change in plant foraging strategies (Kreuz *et al.* 2014, fig. 12). Weed ecological analyses of later Neolithic assemblages from the loess belt do not suggest radical shifts in the general character of cultivation (Bogaard 2004, 118, 151–2).

In the earliest phase of the LBK (*älteste* LBK) the importance of the different domestic animal species is very variable (Schäfer 2010). Dominant species are either cattle or pig, but only rarely the small ruminants sheep and goat. The lowest frequencies of cattle bones are found in the Bavarian area. More regional differentiation can be seen for the subsequent *ältere* LBK. During this phase in all regions cattle is the dominant species. Beside

cattle most of the sites in central Germany (*Mitteldeutschland*) show higher frequencies of bones from sheep and goat, whereas at sites in Alsace and Baden-Württemberg pig is more frequent. During the later phases of the LBK (*jüngere* LBK) no clear herding system can be recognised. In all sites at least 30% of the bones are cattle bones. In the sites in central Germany sheep and goat bones always show higher frequencies.

The importance of hunting (Schäfer 2010) seems to be higher in the earliest phase of the LBK but also at southern German sites mostly dated to this phase. In most of the sites in central Germany the frequencies of wild animal bones are less than 5%. In relation to the question of a correlation between the importance of hunting and short climatic fluctuations, the precision of dating of LBK sites would need to be within c. 20 years. At least some causal relationship between these two factors can be inferred from the greater importance of wild fauna in LBK sites in southern Germany (Schäfer 2010; Schibler 2001).

The scale and intensity of LBK herding has been widely debated (see summary in Knipper 2011). An extensive, transhumant model of cattle herding (e.g. Lünig 2000, 39) finds little support in strontium isotope work on cattle mobility at Vaihingen, Stuttgart-Mühlhausen and Hilzingen in south-west Germany, where results indicate instead that herding activities were focused year-round on local landscapes, including river valleys (Knipper 2011, 355–62). The quantitative scale of cattle keeping was also likely restricted (Knipper 2011, 355–62; cf. Ebersbach 2002). This inference is comparable with the relatively low bone find densities of cattle calculated for the wetland sites of the Zurich region dated to the last third of the fifth millennium (Schibler 2006). Pig strontium isotope values at Vaihingen suggest even more highly localised management (Bentley *et al.* 2004), underlining inferences from carbon and nitrogen stable isotope values for ^{15}N -enriched domestic pig diets over those of wild boar (Fraser *et al.* 2013). Dung accumulated in pig penning areas likely

contributed to manuring of arable plots (Fraser *et al.* 2013).

Recent detection of dairy fats on sieves from LBK sites in the Kujavia region, southern Poland, suggests consumption of reduced-lactose products such as cheese (Salque *et al.* 2012). Nevertheless, stable isotope-based palaeodietary work on LBK sites variously suggests that plant-derived protein played an important role, at least as important if not more so than animal-derived protein (e.g. Fraser *et al.* 2013; Hedges *et al.* 2013; Oelze *et al.* 2010). Recent determinations of stable isotope values of cereal grains and pulse seeds at Vaihingen indicate that a staple role for these crops in the diet of humans at the site is plausible (Fraser *et al.* 2013; Nitsch *et al.* 2015).

New synthetic work by Kreuz *et al.* (2014) on middle Neolithic land use proposes that the potential scale of herding, especially cattle keeping, expanded in the fifth and earlier fourth millennia BC, based on palynological evidence for reduced forest canopy and increasing levels of horse (implying more open grazing habitats). Expansion of later Neolithic herding is broadly suggested in other parts of Europe, too (e.g. Bogaard and Halstead 2015), and this process was also reiterated later on through subsequent Neolithic phases in the Alpine foreland, where it is attested on the basis on increasing bone densities in settlement layers (see above).

Neolithic farming and herding in the Alpine foreland

Many lakeshore settlements in the northern Alpine foreland have been investigated over the last 40 years. According to a very recent overview by Jacomet and Maier (2016), plant spectra are available from 119 settlement phases dated between 4300 and 2500 BC. Agriculture was based on the cultivation of domesticated plants. The major cereals were six-rowed barley (*Hordeum vulgare*), tetraploid naked wheat (*Triticum turgidum* ssp. *durum/turgidum*²) and emmer (*Triticum turgidum* ssp. *dicoccum*). Einkorn only

occasionally played a more important role. The proportions of the two main wheat taxa show significant changes during the time of the 'lakeshore Neolithic': from about 4300 BC onwards, naked wheat was more important (and emmer often rare); from 3500 BC onwards, emmer became increasingly important and was the most important cereal towards the end of the Neolithic in Switzerland and south-west Germany, during the Corded Ware phases (around 2750–2450 BC) (for overviews see Jacomet 2006; 2007; 2008; 2009).

Alongside cereals, flax (*Linum usitatissimum*) and opium poppy (*Papaver somniferum*) were important cultivars. Their remains are found in large masses (often several thousand remains in one sample). Especially during the fourth millennium BC their amounts reach very high values. Another probably important cultivar was pea (*Pisum sativum*). However, due to taphonomic constraints its significance is very difficult to judge. Recent finds of very regularly occurring pod remains (preserved by waterlogging) in the settlement layers of Zurich Parkhaus Opéra (Antolin *et al.* in prep.) may represent material that was overlooked in earlier excavations.

Beside agriculture, gathering played an important role, too (see Jacomet 2006; 2007; 2008; 2009). The most important gathered fruits of which we can also find accumulations were hazelnuts, crab apples, wild strawberries, raspberries, blackberries, acorns, *Chenopodium album* (fat hen) and *Brassica rapa* (wild turnip). Sloe became more important only from the second half of the fourth millennium BC onwards. This may be in connection with an opening of the wooded landscape in the settlement surroundings that becomes visible at that time (see below). Growing conditions improved for light-demanding shrubs.

Despite such extremely good preservation, there are major difficulties with reconstructing the proportions of cultivars versus gathered fruits in the diet (see above; Antolin *et al.* 2016). Some models point to a proportion of maybe 30%; others suggest a

much lower significance. However, we have to envisage a management of fruit-bearing trees and shrubs in the surroundings of the settlements because even if the proportions were low these taxa were gathered in very large numbers (Antolin *et al.* 2016). Worth mentioning is that the significance of gathered fruits most probably changed during the period considered. In times of starvation gathered fruits may have played a more important role. This is demonstrated most clearly at Hornstaad Hörnle IA, where the settlement, including the whole cereal harvest, burned down around 3900 BC; above the burnt layer a layer extremely rich in hazelnuts was encountered (Maier 2001).

How the cereals and other cultivars were grown can be deduced from finds of weeds. The conclusions imply a completely different picture to that based on off-site data, which have often been interpreted to suggest shifting cultivation in the late Neolithic (see Jacomet *et al.* 2016 for a recent overview). First of all it should be noted that the Neolithic weed flora was not only composed of winter and summer annual taxa, as they are mostly today (most of them had not yet reached central Europe from their areas of origin, like the Mediterranean). Important weedy taxa in the Neolithic were other, rather ‘opportunistic’ plants that grew in natural forest clearings (after old trees had fallen down) before the anthropogenic clearing of the woodland, or in floodplains etc.

From the earlier phases of the late Neolithic onwards, over 50% of the weeds were already annuals (see Brombacher and Jacomet 1997, 256–63; Jacomet *et al.* 2016). This points to short fallows. The composition of cereal stores suggests the existence of crop rotation (Jacomet *et al.* 1989, 166–8), showing that a field was cultivated for more than one year. How exactly the fields were worked is not clear; definite indications of ards are lacking, but there are relatively frequent finds of hoes (see e.g. Leuzinger 2002a; for a short discussion on (questionable) late Neolithic ard marks see Jacomet *et al.* 2016). Traditional ecological evaluations based on Ellenberg values, as well as analyses of the functional

attributes of the weeds, show that arable plots were more or less intensively managed (Bogaard 2004). Isotope analyses show a high probability of manuring, at least of some of the fields (Bogaard *et al.* 2013; Styring *et al.* 2016). The soils were not poor and seem to have delivered good yields over several years.

The regular appearance of winter annual weeds points to the growing of winter cereals from the beginnings of the lake dwellings. The number and ubiquity of winter annual weeds rises in the course of the fourth millennium BC. This may point to an increasing significance of winter cereal growing, but also to better conditions for winter annual weeds in the fields. In the latest phases of the late Neolithic (with the appearance of the Corded Ware culture) new winter annual weeds appear (*Agrostemma githago*, *Asperula arvensis*, *Papaver argemone*, *Euphorbia exigua* or *Silene gallica*; see Brombacher and Jacomet 1997). Beside winter annual weeds, summer annuals were also present in the same fields; this has been interpreted as reflecting ‘open’ stands of cereals in the fields (e.g. sowing in rows). The number of summer annual weeds declines in cereal storage samples through the course of the Neolithic.

The weed flora of cereals and flax exhibit a rather early differentiation. Flax weeds were mostly summer annuals, often the same ‘trivial’ species as in the cereal fields. However, there is one exception: the typical flax weed *Silene cretica* appears in larger numbers only in flax stocks (Brombacher and Jacomet 2003). Its development parallels the rising densities of flax remains from 3800 BC onwards. In the course of the late Horgen culture and finally in the Corded Ware period, this flax weed becomes rarer and disappears again, although flax is still cultivated. Why this is the case is not clear (but see Brombacher and Jacomet 1997, 265). In any case, flax (and most probably also pea and poppy) must have been cultivated as summer crops. In contrast to cereals, the summer annuals in flax do not decrease in the course of the late Neolithic.

During the later phases of the late Neolithic (from the Horgen culture onwards) crop stores show an increasing significance of weedy plants which are typical constituents of grassland, mostly low-growing and tread-resistant taxa. This can be interpreted as increasing pasturing pressure on the short fallows.

The heights of the weeds give an indication of the height of harvesting. During the earlier phases of the late Neolithic cereal harvesting was higher than it was in later phases. Flax, however, always contains lots of small (low-growing) weeds, an observation which points to the harvesting of flax by uprooting. The stalks could be used for textile production, an activity for which there are multiple indicators (see e.g. Karg 2015; Médard 2010; 2012).

In the spectrum of wild plant taxa in general an opening of the landscape in the surroundings of the settlements becomes visible, above all from the Horgen culture onwards. For such an opening, fire must have played an important role (see Jacomet *et al.* 2016.).

Animal husbandry

In addition to archaeobotanical and palynological analyses (e.g. Rösch 2013; Van der Knaap and Ammann 1997; Wehrli *et al.* 2007), archaeozoological analysis has also shown a gradual but steady opening of the landscape around the Neolithic settlements in the Alpine foreland (Schibler and Hüster-Plogmann 1995; Schibler and Jacomet 1999; Schibler and Steppan 1999). On this background, it is understandable that for wetland sites dated to the last third of the fifth millennium percentages as well as find densities for cattle bones are very low and therefore document only small cattle herds. It is even questionable whether each of these early wetland sites kept an independent cattle herd (Ebersbach 2002). Fodder provision for early cattle herds must have been the limiting factor for herd sizes (Schibler *et al.* 1997a). It is suggested that during this early phase of wetland occupation cattle were mainly exploited for meat, a prediction supported by a

higher number of non-adult individuals (Hüster-Plogmann and Schibler 1997). According to the higher percentages of bone fragments, during this early phase sheep/goat and pigs were kept more frequently than cattle. In addition to environmental reasons, cultural impacts could also be responsible for higher frequencies of sheep and goat bones.

For the period between 4000 and 3400 BC, percentages and find density values slightly increase (Fig. 9.3) and document slightly larger cattle herds, possibly kept for both milk and meat exploitation. Fatty acids of fresh and fermented milk products were found in ceramic pots at the site Arbon Bleiche 3, dated to the beginning of the thirty-fourth century BC (Spangenberg *et al.* 2006). Until now this is the only analysis of fatty acids in Swiss Neolithic pots and therefore we cannot exclude earlier milk use, especially since much earlier proof of milk exploitation comes from LBK sites in Hungary (e.g. Salque *et al.* 2012).

For the period between 3400 and 2800 BC, proportions of cattle bones seem to be lower than in the previous period. Considering the find densities, no difference to the previous period can be seen (Fig. 9.3). The explanation can be found in higher percentages and higher find densities of pig bones, which document more intensive pig herding, causing the reduction in cattle percentages. This means that during the Horgen culture cattle had the same economic importance, but more pigs were kept than in sites of the previous period. This could be due to a more intensive exploitation of cattle, as milk and also draught animals, necessitating an increasing meat production based on pigs. The cattle of all Horgen culture sites appear to have been smaller but more robust than in preceding and subsequent periods (Deschler-Erb and Marti-Grädel 2004; Hüster-Plogmann and Schibler 1997). Initial, weak osteological pathologies found in Arbon Bleiche 3 support a first exploitation as working animals (Deschler-Erb and Marti-Grädel 2004). These smaller and more robust cattle are contemporaneous with the occurrence of wooden

wheels and small carts (Jacomet and Schibler 2006). Whether or not this is a specific and intentional transformation of cattle exploited as draught and working animals must remain open for further debate. Recently obtained genetic evidence for cross-breeding between domesticated male cattle and wild female aurochs dated to around 3100 BC at least raises the question of intentional Neolithic cattle breeding (Schibler *et al.* 2014).

The final phase of the late Neolithic (2800–2500 BC) is characterised by high proportions and high find densities of cattle bones (Fig. 9.3). This supports the conclusion that larger cattle herds were maintained. In addition, the first evidence of castrates (Hüster-Plogmann and Schibler 1997) clearly supports the exploitation of oxen as draught animals. According to the increased find density values, sheep and goat were also kept in much larger herds during this latest Neolithic period. The bone density values for pig stayed at the same level as in the Horgen culture. This means that markedly increased herds of small and large ruminants were kept at the end of the Neolithic lakeshore sequence. This would only be possible if a more open landscape was available to be used as pasture. As mentioned above, the increased presence of bird (magpie, partridge, black-tailed godwit) and mammal (e.g. hare, red fox) species that need open and/or more structured landscapes, as well as the archaeobotanical results, support the inference of more open areas in this latest Neolithic wetland period.

The evolution of the importance of domestic animals differs between western and eastern parts of the Swiss Alpine foreland. This could be due to cultural as well as topographic differences. The best example for culturally determined differences is known for the pigs in the Horgen culture. Pig bone frequencies gradually increase up to around 45% at sites of the Pfyn culture around Lake Zurich and Lake Constance. During the same period (later Cortaillod culture) lower pig bone proportions of around 20–30% are observed at sites of the western Swiss lakes. In this area, the

importance of pig bones only increases at around 3400 BC, when the first sites influenced by the Horgen culture are known, and reaches up to 70%, which is typical for the Horgen culture all over Switzerland. Higher frequencies of sheep/goat bones in the western part and higher frequencies of cattle bones in the eastern part of Switzerland could also be due to cultural as well as topographic differences (Schibler 2017).

Discussion – comparison of Neolithic subsistence practice in the loess belt and Alpine foreland

As set out in the first section of this paper, the loess belt and Alpine foreland present a series of stark contrasts in site formation processes, organic preservation and chronological resolution. They also offered different ecological contexts for early farmers. Of course the material culture traditions of early farmers in the two regions also present a clear contrast, the Danubian longhouse Neolithic having spread no further than roughly the river Rhine and the Hegau, while the well documented late Neolithic lakeshore sequence of the Hornstaad culture was derived from the TRB-related complexes that also spread across the loess lowlands, forming the Michelsberg tradition (e.g. Hofmann *et al.* 2016).

Despite profound archaeological and cultural differences, however, the loess belt and Alpine foreland sequences also present convergences: reiterations of similar processes operating in different ecological (including cultural) circumstances, and to some extent on different timescales. In the sections below we discuss three critical points of convergence: intensive land management strategies rather than long fallow/slash and burn regimes, with some indications of modest expansion through time associated with cattle traction; an expansion in the scale of herding and possibly cattle mobility through time; and a staple role of crops in the diet, supplemented by animal products

(including milk) and probably especially by hunted fauna and gathered plants in response to climatic oscillations and possibly other negative impacts on crop yields.

Intensive land management strategies without long fallow

In neither region does the record of early farming conform to Boserupian expectations of a gradually decreasing fallow period, beginning with forest fallow (Boserup 1965). Though the intensity of soil disturbance through tillage/weeding and of likely manuring was demonstrably variable, even within the landscape of a single settlement (e.g. Bogaard 2011b; Bogaard *et al.* 2013), farmers in these regions aimed to develop arable plots with well tilled, manageable soils that could be, and were, cultivated for multiple generations.

Whether land was passed down from individual households or broader social groups is an interesting question. The earlier LBK arable landscape at Vaihingen appears to have been organised into sectors that reflected membership in one of several house groups (Bogaard 2011b), and supra-household groupings are also variously attested in the construction of houses in Alpine foreland lakeshore sites (e.g. Hofmann *et al.* 2016) as well as in their subsistence practices (Doppler *et al.* 2013; Hoffstadt and Maier 1999; Hosch and Jacomet 2004; Röder *et al.* 2013). Notwithstanding such groupings, management of arable land at the household level is suggested by new stable isotope determinations of crop stores from the burned layer at Hornstaad-Hörnle 1A (Styring *et al.* 2016).

It has often been argued that the climate and/or soils of the Alpine foreland were less favourable for agriculture than the *Altsiedellandschaften* of the loess belt settled in the early Neolithic and into the middle Neolithic (later sixth to earlier fifth millennia BC) (e.g. Kroll 2012; Schier 2009). For example, Schier (2009)

argues – based on off-site micro-remains data by Rösch *et al.* (2014) – that the spread of the Neolithic beyond fertile loess areas was only possible through slash-and-burn cultivation. This is not visible in our data (fully argued in Jacomet *et al.* 2016).

An interesting question is how the relatively short-lived settlements of the Alpine foreland related to what appear to have been longer-lived and established arable plots (Hofmann *et al.* 2016). Recent work by Ebersbach and colleagues on dendrochronological re-dating of Zurich sites suggests that from c. 4200 BC until Corded Ware settlement around 2550 BC (with some shorter interruptions) the whole area around the northern end of the lake was intensively used for farming, gathering, hunting, pastures and wood resources, and that the gradual opening up of the landscape reflected in palaeoecological records is reflected also in the settlement archaeology (Ebersbach *et al.* 2015). While woodland exploitation appears to have shifted around the landscape on a c. 10 to 20-year cycle, enabling regeneration of timber sources (e.g. Bleicher 2009 on the Federsee region in Upper Swabia), arable land did not form part of such a long fallow system. The general impression is that settlement shifted along the lakeshore through time, but remained tethered to established managed landscapes (arable, woodland etc.).

The available arable weed data from the later Neolithic and Bronze (and Iron) Age in the two regions are consistent with a tendency towards expansion through time, associated with the development of cattle draught, and in some cases a corresponding reduction in the intensity of soil disturbance and perhaps fertility (Bogaard 2011a; Brombacher and Jacomet 1997; Kreuz 2012; Styring *et al.* 2016).

Expansion in herding and cattle mobility through time

While theories of LBK cattle transhumance (e.g. Lüning 2000) do

not find much support in the available palaeoecological or stable isotope/life history data for the early Neolithic (Knipper 2011), there are possible indications of more extensive wood pasture in the later fifth and fourth millennia BC in the loess lowlands during the Michelsberg phase (Kreuz *et al.* 2014). However, given the different interpretative methods that can be applied to assess animal economies in the two regions (see above), no evidence for the *absolute* scale of herding is available in the loess belt. It is therefore significant that parallel indications for opening up of settled landscapes in especially the later fourth millennium BC in the Alpine foreland coincides with *higher* absolute densities of faunal remains in lakeshore settlement occupation layers. The case for a large scale of animal keeping in the Alpine foreland is thus particularly secure and lends some support to less direct inferences in the loess region. Such predictions in the loess areas could at least be tested further by, for example, tracking individual life histories of domestic cattle through time, along the lines developed by Knipper (2011), through the later Neolithic. First unpublished Sr isotope data on late Neolithic cattle bones from lakeshore sites at Lake Zurich at least show cattle mobility from 3900 BC onwards.³

The role of crops in the diet

While there has been much discussion particularly in north-west Europe over the role of crops in the Neolithic diet (e.g. Bogaard 2015; Hedges and Reynard 2007), independent approaches and lines of evidence suggest that crops played a staple role in both the loess region and Alpine foreland Neolithic, though the role of pulses in particular may have varied. In the loess regions palaeodietary studies incorporating humans, fauna and most recently botanical remains suggest that cereals and pulses were likely staple foods (Fraser *et al.* 2013; Hedges *et al.* 2013; Nitsch *et al.* 2015; Oelze *et al.* 2010). The importance of peas in the Alpine

foreland is less clear for taphonomic reasons, as discussed earlier, but quantitative modelling of lakeshore Neolithic diets suggests that plants likely provided the majority of calories. However, it is difficult to reconstruct the importance of cereals in the diet in absolute terms in the Alpine foreland (where palaeodietary modelling of the human diet based on stable isotope values cannot be applied due the rarity of human skeletal remains) because botanical remains are difficult to quantify. But we can for instance take – hypothetically – the importance of hunting as an indicator for the status of nutrition supply, because this is much easier to quantify. In this respect we suggest that high proportions of hunted animals could point to a poorer supply of carbohydrates – for whatever reason (we are aware of the fact that the amount of hunting has to be seen in its own individual context and may also have had other reasons such as feasting, ritual, specialised hunter groups etc.). In the following we only address the climatic interpretation because this has proved to be controversial.

As noted earlier, it is difficult to compare wetland and dryland sites directly in terms of short-term climate change, for reasons of differential chronological resolution. But if we compare longer periods, some characteristics appear which might be of general significance. In most of the dryland sites in Switzerland only a very low importance of hunting can be recognised (Fig. 9.4; Schibler 2017). There are only a few exceptional cases of dryland sites with higher proportions of wild animal bones. In all of these sites some later features protect the archaeological layer from being eroded, e.g. covering by a Bronze Age rampart, covering by rockslide sediment or surviving archaeological material in crevices (Schibler and Jacomet 2005). It seems that well-known periods of climatic deterioration with high precipitation have led to erosion of a lot of dryland sites with higher proportions of hunted animals. In these cases, a high proportion of hunting would point to an enhancement of the food supply in periods of very rainy weather and low cereal yields. Therefore, taking into account the limited

chances for the preservation of archaeological layers during periods of climatic deterioration (Schibler and Jacomet 2005), it is unsurprising that, compared with Neolithic and even Bronze Age wetland sites of the Alpine foreland, very few Neolithic loess belt dryland sites exhibit high levels of hunting (Arbogast *et al.* 2001; Schäfer 2010).

It is anticipated that ‘climatic deterioration’ would have a more pronounced effect in the Alpine Foreland than in the loess lowlands (Kreuz *et al.* 2014, 88). Is this only an artefact of the more precise dating possibilities and the higher preservation chances in the former, which allow us to make such correlations? As negative weather impact factors we should include stormy, wet, dry, cold and hot conditions (or combinations of some of them) that are clearly outside the normal average in terms of intensity or duration. But can we see such extreme conditions at a very high resolution? Recently, Nicolussi *et al.* (2013) have compared summer temperatures of the eastern central Alps with settlement dynamics in the Lake Constance region (including eastern Switzerland and Upper Swabia) in the millennium between 4400 and 3400 BC. Temperature reconstructions rely on tree rings (Eastern Alpine Conifer Chronology, EACC) and are therefore directly comparable with tree ring series from the lakeshore settlements. However, they reflect only June–July–August temperatures and for instance give no information on the situation in spring, which is very important for cereal growing. Neither do they document shorter events of strong precipitation or other events like storms. These data are therefore only to some degree useful as comparison with the economy in the lakeshore settlements. What can, however, be concluded from this study is that there seem to be only partial correlations between the ^{14}C -residual curve (reflecting solar activity) and the curves of the summer temperature (Nicolussi *et al.* 2013, fig. 2, 73). Why there is an almost perfect correlation between the ^{14}C -residual curve and the proportion of wild animal bones for the Neolithic

lakeshore sites of the Zurich region (Hüster-Plogmann *et al.* 1999; Schibler and Jacomet 2010) despite these limitations needs to be clarified. One possible explanation could be that in the Alpine Foreland during periods of increasing ^{14}C -residual values the chance of short-term unfavourable weather events was much higher than during periods of decreasing values, and therefore a positive correlation with the importance of hunting is observed. We therefore propose not to correlate single ^{14}C -residual values with data like the importance of hunting or lake level fluctuations, but rather to compare or correlate these events with longer periods of increasing and decreasing ^{14}C -residual values. This discussion shows how difficult it is to use only one climate proxy or only one possible impact on environment and economy to explain all kinds of possible correlations between environmental, economic and cultural phenomena (for ongoing debate on lake-level fluctuations, see e.g. Bleicher 2013b; Magny 2013).

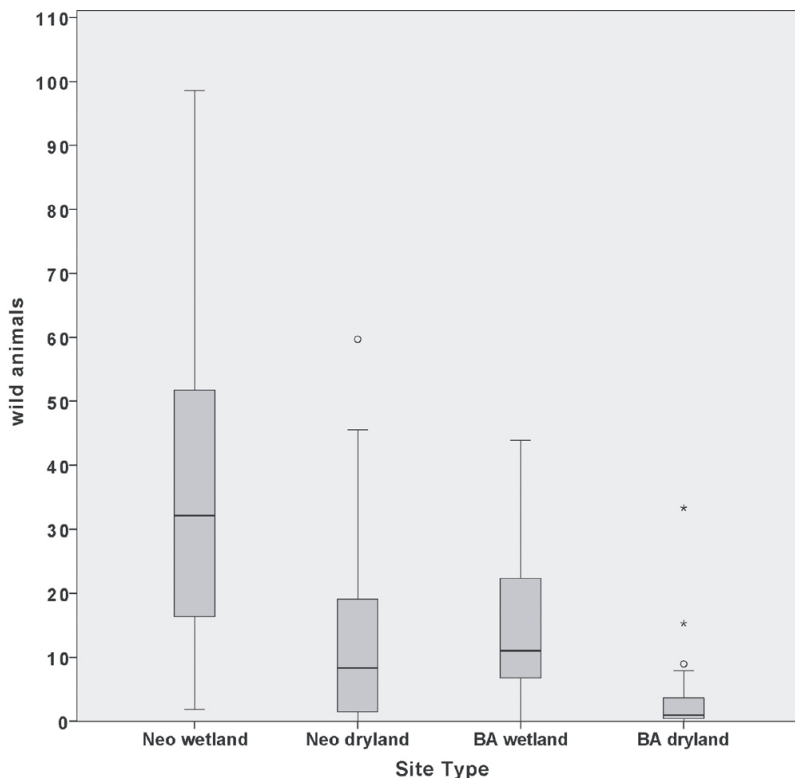


Figure 9.4. Comparison between importance of wild animals based on numbers of bone fragments, site type and chronology. Neo = Neolithic; BA = Bronze Age. Neolithic dryland: 20 sites; Neolithic wetland: 148 sites; Bronze Age dryland: 31 sites; Bronze Age wetland: 27 sites. From Schibler (2017).

If we assume hypothetically that the cool summers in the eastern central Alps also reflect cooler summers in the lowlands to the west, that they are associated also with higher precipitation and that the springs were rather wet, this may have had a large negative impact on cereal production. If we additionally assume that poor cereal harvests were supplemented by gathering and hunting, we should see a greater importance of hunted animals in different regions during periods with colder summers. If we take the period of the thirty-seventh and the early thirty-sixth century

as an example, the high amounts of hunted animals in Zurich, Lake Zug and at Lake Constance clearly point to such a connection (Arbogast *et al.* 2006; Schibler 2004; 2017; Schibler *et al.* 1997b; 1997c). But there were other regions where such unfavourable weather conditions had less influence; these lie at the southern slopes of the Jura mountain range, on the shores of Lake Bienne and Lake Neuchâtel, where the local climate is more favourable. Yet even in these regions, during the thirty-seventh and thirty-sixth centuries BC between 30 and 50% of the animal bones belong to wild species, mostly red deer. Therefore, the impact of weather conditions on the level of nutrition supply can be very variable depending on different factors like topography, and therefore the microclimatic situation.

In addition, we should also keep in mind that not only wet and/or cold conditions would have a negative impact on cereal production, but also dry periods that are mostly to be expected for the northern slopes of the western lakes Bienne and Neuchâtel and especially for Alpine dry valleys like the Valais. Keeping all of these possibilities in mind, short-term climatic oscillations of different kinds had and still have a strong impact in different geographical and topographical areas.

Another important point has become clear from analyses of tree rings using a dendrotypological approach (for an overview of western Lake Constance, see Billamboz 2014). If a settlement area (*Siedlungskammer*) was intensively used for timber supply, pasture and also agriculture, there is usually a drop in settlement activities. After a period of ‘regeneration’, another phase of intense settlement activity is observed. Therefore, departure from an area, as well as more hunting and gathering, may be connected with overexploitation of the landscape. Such issues remain to be analysed in the wild plant spectra. Recent stable isotope analysis of crops through the Pfyn–Horgen sequence at Sipplingen, Lake Constance, does not register any clear change in crop growing conditions towards the end of the Pfyn occupation, prior to a 300-

year settlement gap (Styring *et al.* 2016). While cereals may have declined and hunting levels increased as a result of climatic deterioration (Billamboz *et al.* 2013; Steppan and Stephan 2012), the crop isotope results document farming strategies (including preferential manuring of free-threshing wheat over barley) that were sustained for around 200 years through the various Pfyn phases (Styring *et al.* 2016).

It has been noted (Schäfer 2010; Schibler 2001) that hunting levels on LBK sites tend to increase towards the Alps, perhaps because unfavourable weather conditions may have had a stronger impact on economy there. Tresset and Vigne (2001) found that relatively high hunting levels were associated with a distinctive focus on pig husbandry on LBK sites in the Upper Rhine, Baden-Württemberg and Bavaria; they suggested that these practices reflected a distinctive agricultural system focused on densely forested areas. It could, however, also be argued that pig is the only domestic animal that could be more intensively produced. This is possible because not all of the domestic pigs need to be kept and fed within the settlements; some could have been kept more freely as semi-wild pigs in the surrounding forests. If more meat was needed, Neolithic farmers could simply have attracted these semi-wild pigs closer to the settlements and hunted them down. Such a scenario would explain the fact that pig bones with damage from arrowheads, or with arrowhead points still embedded, are regularly found in Neolithic pig bone assemblages (Zurich Parkhaus Opéra: Schäfer 2010; Arbon Bleiche 3: Leuzinger 2002b; Niederwil: Clason 1991). This technique of pig keeping is also proven by new results of geometric morphometric analysis of Neolithic pig teeth (LBK and wetland sites in Switzerland), which document large domestic pigs that could be described as hybrids of domestic pigs and wild boar (Evin *et al.* unpublished data). According to these arguments, Neolithic bone assemblages with high frequencies of hunted animals (mostly red deer) and pigs (mostly large pig hybrids) would be a strong indication of an

economic crisis.

Conclusions

A broad conclusion to be drawn from the available evidence is that, despite clear differences in site formation and taphonomy between the two areas, and likely variable susceptibility to climatic oscillations, general convergences in land management and subsistence practices in the loess belt and Alpine foreland suggest that the long-term social/ecological consequences of farming were similar. The power of this observation is that it frees interpretation of the changing material cultures of the two areas from environmentally determinist explanations – for instance that the ‘shifting’ nature of lakeshore settlement reflects a less permanent form of farming (on poorer soils) in comparison to the earlier longhouse Neolithic of the loess belt (Schier 2009). Rather, it appears on balance that the very different settlement patterns, house forms and other aspects of material culture of the two regions are distinct cultural expressions and negotiations of the tensions and contradictions of early central European farming. Moreover, while the archaeological records of the two areas are of different type and cannot be compared directly, the high-resolution record of the Alpine foreland affords privileged insights into the responses of communities to economic problems caused by a wide range of possible causes, including climatic (or weather) fluctuations, making it possible to frame predictions for such responses in the loess belt, where the archaeological record is unlikely to reflect these relatively rapid episodes.

Although the potentials and quality of dating and of site histories are different in the two areas, long-term developments in economy and landscape can usefully be compared, provided that the differential quality of preservation is taken into account. Only a sophisticated combination of results, methods and interpretations from both areas can provide a more holistic view

of the economic and ecological evolution of early farmers in central Europe.

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Notes

1

All dates BC are calibrated ^{14}C dates or dates based on dendrochronology.

2

Nomenclature follows Zohary *et al.* 2012, modern grouping.

3

Swiss National Science Foundation, project: CR12I2_143815 / 1;
project members: T. Doppler, C. Gerling, A. Pike, V. Heyd, M.
Lehmann, C. Knipper, J. Schibler.

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Size matters? Exploring exceptional buildings in the central European early Neolithic

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Introduction: about the longhouse

‘The longhouse was the central fact of LBK existence’, as Alasdair Whittle (2012, 195) once put it, and it has remained an enduring concern in his work over the years. His contribution has always challenged received ideas about the house, be this in terms of the size of the social unit inhabiting it, the idea of autonomous households, or more recently the controversy between alternative yard and row settlement models or the applicability of the ‘house society’ concept (e.g. Whittle 1988, 67–73; 1996, 162–7; 2001; 2003, 134–43; 2009; 2012). Instead, he has stressed the ways in which the longhouse brought a range of diverse people together, functioning as a focal point within a meshwork of relations. He

has also addressed the mythological and symbolic aspects of the building, most recently suggesting a homology between the human body and the house (Whittle 2012).

In contrast, the question of why the LBK house follows a relatively predictable modular pattern, long established by Modderman (1970; 1972), has been of more passing interest, although he has addressed the problematic relations between house size and partition (Whittle 1988, 69–73). Elsewhere, the significance of partition is much debated, sometimes with the same aim to find ‘the’ single correct answer that Alasdair has also noted for settlement patterns (e.g. Whittle 2012, 196). Initially, it was argued that the three parts of the house served different economic functions – for instance cattle stalling in the back with its planked walls, cereal storage in the front with its double posts, and general everyday activities in the centre (Modderman 1970, 101–9). For Van de Velde (1990) tripartition was connected with the status of the inhabitants, with tripartite structures associated with greater numbers of adzes at some of the Langweiler sites, but this remained difficult to substantiate elsewhere. Others have pointed towards house length as an indicator of extensive networks and, indirectly, status (Hofmann 2012). In contrast, for Coudart (2015) the tripartite house is intimately bound up with the maintenance of egalitarian relations, whereby houses with an extensive front end were responsible for storing and redistributing the community’s grain, always under the careful scrutiny of others.

However, it is now being recognised that there may be more diversity in how the building was actually inhabited, as well as in the importance accorded to clear internal partitioning. This is true for example in Poland, where it can be difficult to discern three parts based on the post constellations inside the house (e.g. Czerniak 2016, 47–53). In her comprehensive work, Coudart (1998) also pointed out that none of the houses in the Paris basin show three parts as described by Modderman. At this western edge

of the LBK and in this late phase of the culture, one can only distinguish between large and small houses on the basis of the number of post rows in the rear parts of the buildings, i.e. behind the back corridor, but there are no front modules any more (Hachem 2011, 212, fig. 129). The biggest houses of this kind reach the same lengths as the tripartite *Großbauten* or type 1 houses in other parts of the LBK. As we discuss below, the large houses of Cuiry-lès-Chaudardes seem to have played a special role in the community, as is sometimes also supposed for *Großbauten* further east. But what is the significance of such variation? Is it simply incidental, an aspect of the house allowed to vary randomly, or was it bound up in social projects at local and regional scales?

Our approach to tripartition is informed by recent interpretations that stress the variability of the Bandkeramik house. Thus, while we recognize that at a general level, humans and houses are ‘entangled’ and mutually constitutive (e.g. Hodder 2013, 350), we also want to explore the significance of the morphological differences between buildings in detail and have therefore chosen a vantage point rooted in the specific circumstances in which such houses were built. For us, then, variability is most of all concerned with the different social contexts and narratives in which the LBK house could be deployed, and the different ways in which its inherent possibilities for action would consequently be brought to the fore (Hofmann 2013). For example, as Pechtl (2009) has suggested, whether the length of a building became the focus of social elaboration depended on the social scale – household or site – at which competition was most intense. Thus, the way ‘the’ house was embedded socially, and whether or not it was the focus for internal or exterior elaboration, varied throughout the LBK (see also Coudart 2015, 319–22), and we can begin to ask in what circumstances the size of the houses mattered for their role in the hamlet and when their internal partition was of greater

importance.

Therefore, rather than trying to find a single solution for the meaning of tripartition, we would like to explore how this aspect of Bandkeramik buildings was differentially employed. We concentrate on a comparison of five sites with sufficient information: Cuiry-lès-Chaudardes in the Aisne Valley of northern France, Geleen-Janskamperveld in the Netherlands, Harting in Lower Bavaria, Bylany in eastern Bohemia and Mold in Lower Austria (Fig. 10.1). For each site, we summarise the key characteristics and partitioning of the largest houses and then discuss their role within the community. In this way, we are hoping to contribute to the general theme of variability in social relations that has formed such a cornerstone of Alasdair's work.

Bylany: size or structure?

Let us begin with the large Bohemian site of Bylany, which extends over a considerable area and was in use over 25 phases, from the end of the earliest LBK to the late LBK (Bohemian phases LnK Ic–IVb) (Pavlů 2000, 264 table 7.7.2.A). The 106 houses have been classified in different ways. P. J. R. Modderman described them according to his house types and distinguished 39 tripartite houses of type 1b or *Großbauten* ('big buildings'), 31 bipartite houses of type 2 (*Bauten* – of medium size) and 36 of type 3 (*Kleinbauten* – 'small houses' consisting of just the central module) (Modderman 1986, 391, table 47). The total length is only known for part of the houses; of the 39 tripartite buildings 23 were measurable and gave varying lengths from 14.2m (house 149, phase IId) to 42.5m (house 41, phase IIc). Three buildings of that kind are mentioned for the earliest phase, LnK I, but most belong to phases IIa/d–IIIb (Modderman 1986, 386–8, table 43).

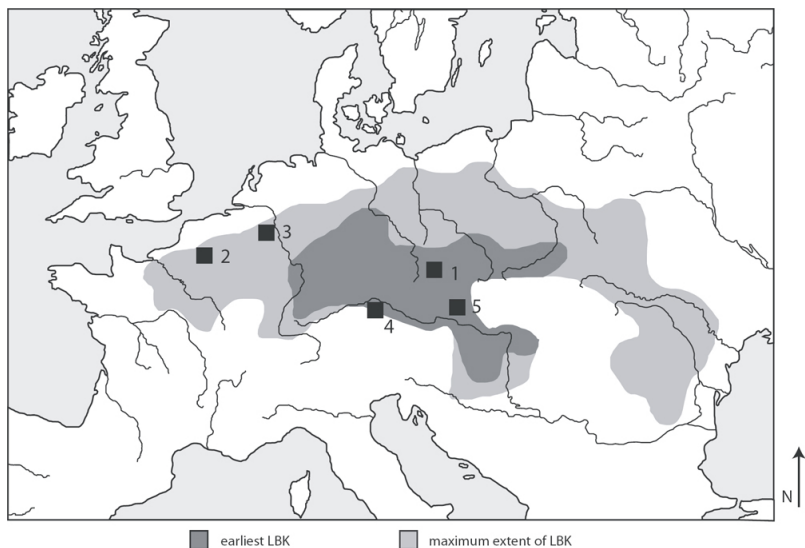


Figure 10.1. Map of LBK distribution with main sites mentioned in the text: 1. Bylany; 2. Cuiry-lès-Chaudardes; 3. Geleen-Janskamperveld; 4. Harting; 5. Mold (base map after Jeunesse 1997, fig. 1).

All houses classified as type 1b have a southern part with one or several cross-rows of double posts. As the settlement is on a slope descending northwards to the Bylanka brook, these front parts faced uphill (Pavlů 2010, foldout maps). Recently, doubts have been voiced concerning additional floors in these front parts and their interpretation as granaries (e.g. Rück 2009). For Bylany, the position of the houses in the regional topography makes it absolutely clear that the double posts in the front section could only have served to support a platform and not to even out the hill slope (Fig. 10.2). These additional top floors could have functioned as storage spaces or granaries. Unfortunately, as no systematic sampling was carried out (Peške *et al.* 1998), there is no positive indication for this interpretation, but on sites with extensive sampling, such as on the Aldenhovener Platte, there are hints that the harvest was stored in type 1 houses (Lüning 1988, 82–3). Due to the high soil acidity in Bylany the faunal remains are rather poor and mainly consist of animal teeth, so no

differences between the houses are visible (Peške *et al.* 1998, 88).

In his substantial work on the situational analysis of artefacts in Bylany, Pavlů proposes a different formal classification of the houses by length, with limits at 4.3m, 13.5m, 26.0m and 48.5m (Pavlů 2000, 191). The biggest houses, falling between 26.0m and 48.5m, only appeared in the tenth period of the settlement (LnK phase IIa) and ended in the twenty-first period (end of LnK III). Pavlů argues that these few large houses ‘represent the residence of a chieftain (big man)’ and were only built when the number of inhabitants exceeded ten families (Pavlů 2000, 269–73 and fig. 8.2.a). In spite of the poor faunal assemblage, in a recent correspondence analysis linking animal bones and houses at Bylany Pavlů suggests that large tripartite houses had more domestic livestock than the others. They also seem to be linked with large storage vessels and a higher proportion of ceramics with linear decoration (Pavlů 2013, 32, figs 1–3), and the author concludes that ‘the occupants of three-part houses had the highest status, having a fully Neolithised economy based on animal husbandry and cereal farming’ (Pavlů 2013, 35).

Comparing Modderman’s and Pavlů’s classification systems, we can see that they overlap considerably. Modderman’s type 1b houses range from 14.2–42.5m, type 2 houses from 9.0–33.5m, and type 3 houses from 5.5–13.0m (Modderman 1986, 386–8, table 43). Therefore some type 3 houses fall within the size range of type 2 houses, while many of the latter are within the range of the tripartite 1b houses. Three of the type 2 houses are over 26m long (house 88: 27.5m; house 679: 30m; house 702: 33.5m) and therefore belong to the largest houses by Pavlů’s definition.

Thus, following Modderman we would have to conclude that in Bylany it was not so much the size, but the structure of the building which mattered, if we follow Pavlů only the biggest buildings had a special importance for the community. This is an interpretive contrast also found elsewhere.

Harting: big is beautiful

At Harting (Fig. 10.3), a site in the Upper Palatinate region of Bavaria excavated in 1983 and 1984, the limits of the settlement were not reached, especially towards the south, and many building plans have remained incomplete (Herren 2003, 2–6). Eight LBK house generations (I–VIII) date to the middle and late LBK (Herren 2003, 95), with further occupation in the succeeding Stichbandkeramik culture (SBK). Overall, there are many overlapping houses, often making it difficult to identify the interior structure of buildings correctly and to assign loam pits with datable pottery to a particular house.

The most interesting feature of Harting are the many particularly long buildings. Following Pechtl's (2009, 188) definition, which is based on the top 10% of lengths, houses which exceed 33m can be classed as exceptional. Indeed, at Harting, size distributions provide a continuous curve up to around 32.5m, followed by a distinct step up to 36.5m. Seven buildings fall into this class of very long houses; the largest is an incomplete house plan measuring over 50m. Both type 1b and type 2 buildings are represented in this size range, with five and two examples respectively. In general, at this site (in contrast to Janskamperveld, see below) partition is not a good predictor of house length – type 1b and type 2 houses are equally well represented in the size group between 20 and 32m, and at the shorter end of the scale there is considerable overlap between types 2 and 3. Since stone tools and animal bones have not yet been analysed, and the cereal remains were destroyed in a recent flood damaging an archaeological store (Herren 2003, 3), it is impossible to comment on economic differences between kinds of buildings.

While we might thus conclude that at Harting, size was everything, this was not always the case. Following Herren's (2003, 128–38) chronological scheme and her attribution of houses to yards A–J, it is obvious that very long houses cluster

near the southern end of the site (Fig. 10.3), while yard H is composed entirely of shorter houses of types 2 and 3. This could provide an interesting parallel with the situation at Cuiry (see below), where short houses are connected with the use of more wild resources, but that will need further confirmation from the animal bone analysis. Chronologically, the first house generation for which buildings are attested (generation III) and the two potential earlier generations (postulated in order to fit all undated houses within the tenets of the *Hofplatzmodell*; Herren 2003, 134–6) have yielded no very long houses, and no house of type 1. This changes in generation IV/V, when the tripartite house 9, the longest on site, is constructed in yard B. The special status of house 9 lies not only in its above-average size, but also in the fact that it was first extensively repaired, and then re-erected on the same spot as house 10 (Fig. 10.4). This direct overlap of successive houses is unusual for the LBK, as are the longitudinal features on the west side of the building, which are most likely connected to the initial repair episode, to the dismantling of the earlier house, or to an attempt to ensure the stability of the second building on what was by then soft ground (Hofmann 2013, 43). Overall, this can be read as a house of particular renown being established, with much energy subsequently invested in its perpetuation.

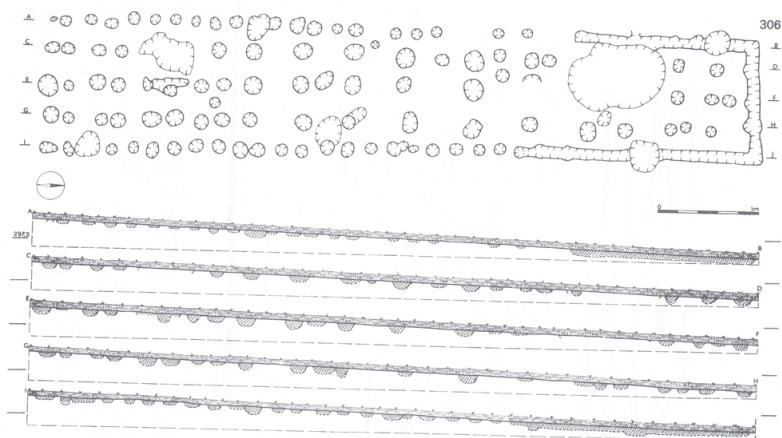


Figure 10.2. Bylany, house 306 as one example of the tripartite houses

on a south–north slope (Pavlů et al. 1987, 2; reproduced with kind permission of I. Pavlů).

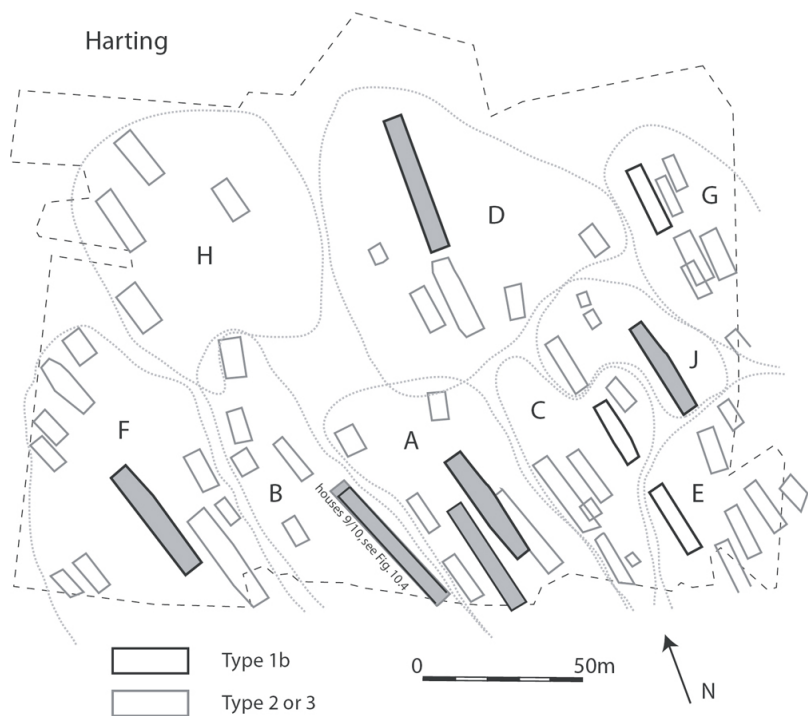


Figure 10.3. *Plan of Harting. Exceptionally long buildings are shaded (base plan after Herren 2003, 129).*

The next very long building (constructed in phase VI) belongs to a different yard, yard A, while in phase VII it is the turn of yard D. During these phases, there is only ever one very long house, which is at the same time the only 1b-type building. Just as for type 1a houses at Janskamperveld (see below), one could assume a special status for these houses, either in terms of competition (Hofmann 2012; Pechtl 2009) or because they also fulfilled specific communal functions. These responsibilities were taken on by a different yard in each phase, and were not inherited down the line. The picture changes again in phase VIII, the last LBK phase. There is still only one building which is both exceptionally long

and belongs to type 1b – this time on yard F. However, the exclusivity rule has been relaxed. Type 1b houses also exist on yards C, E, G and J, although they all remain below 33m. Conversely, yards A and B construct exceptionally long houses in this phase, but these are of type 2. Are we witnessing the breakdown of traditional norms, whereby once exclusive architectural options are becoming much more widely available?

With only part of the site excavated, we cannot be certain. Nevertheless, we are left with an intriguing narrative that merits to be tested further on other sites. Type 1b buildings begin as very long, special houses part-way through the sequence. Yet whatever values are attached to them, they break down towards the end of the settlement. Perhaps the very long type 2 houses are an attempt to retain some element of distinction which tripartition alone could no longer provide. Be this as it may, this is an episode of experimentation and reorientation which preceded the new architectural styles and value systems of the post-LBK world.

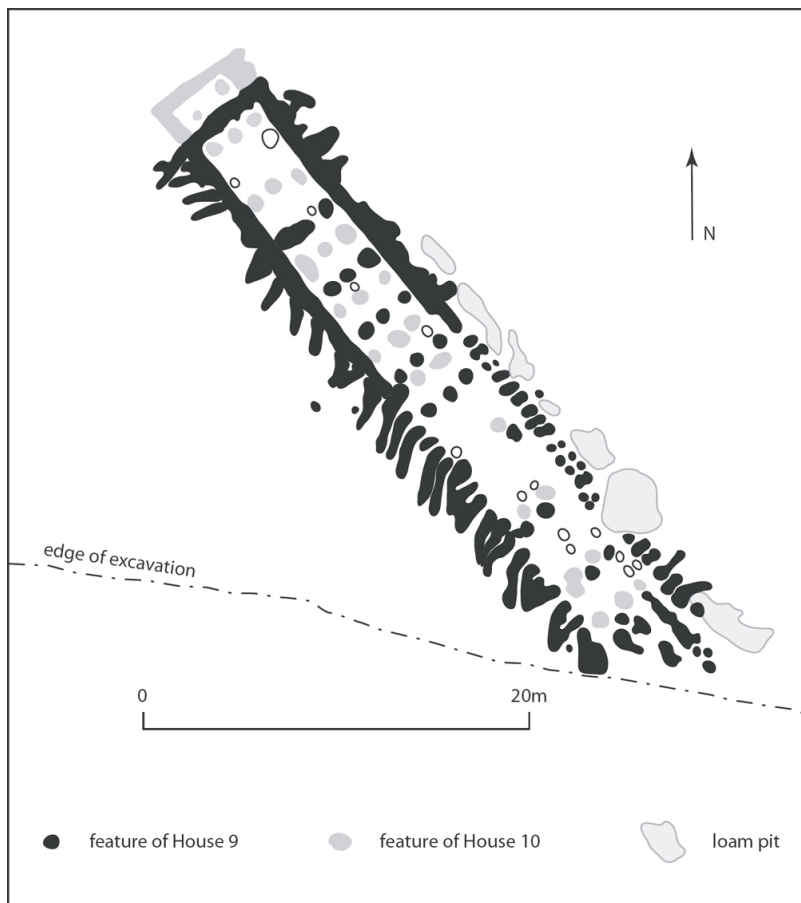


Figure 10.4. Simplified plan of houses 9 and 10 at Harting (after Herren 2003, Beilage 1). Walls and wall trenches of both buildings overlap and have not been separated out in this drawing.

Building to impress at Janskamperveld

Geleen-Janskamperveld (Fig. 10.5) is part of the Graetheide settlement cluster in the southern Netherlands and was excavated in the 1990s. The site is occupied over four phases in Dutch LBK periods 1b and 1c, and again for one phase in period 2c (Van de Velde 2007a, 220). Overall, 69 houses were identified, although the limits of the site were not reached in every direction. Thirty-

eight houses were well enough preserved to reconstruct their internal partition. Of these, 23 were tripartite, only eight bipartite, and seven were single-module houses (Van de Velde 2007b, 223). Even if the less well preserved examples are taken into account, about half of the buildings are tripartite (Van de Velde 2007b, 223). Tripartition can hence not be considered exceptional.

However, Janskamperveld is part of an area comprising the German Rhineland, the southern Netherlands and Belgium where a special form of tripartite building, the 1a house, also exists. In contrast to the classic tripartite houses with wall trenches around the back part only (1b), or indeed with no trenches at all (1c houses, Cladders and Stäuble 2003, 493), a 1a building is entirely surrounded by wall trenches (Modderman 1970, 110–2) (Fig. 10.6). Applying these criteria, 21 of the 33 tripartite houses belong to type 1c, and six each to types 1b and 1a (Van de Velde 2007c, appendix). Clearly, then, a certain exclusivity still attached to some tripartite buildings, those marked externally by trenches. This is also emphasised by their greater length. At Janskamperveld, the three longest buildings (around 31.5m, 30.5m and 25.5m) belong to type 1a and are a clear step beyond the longest type 1b building, which reaches 22m. Below this level, the distribution of house lengths is smoother, although length is quite closely connected to partition (Louwe Kooijmans *et al.* 2003, table 3; Van de Velde 2007c, fig. 4-2). In turn, type 1a houses do not stand out in terms of artefact distributions: there is great variation in sherd numbers between houses of the same type, while flint artefacts were more commonly discarded near type 1b and 1c buildings (De Grooth 2013, 132–3; Van de Velde 2007b, 235). In sum, the difference between tripartite, particularly 1a, buildings and other kinds of houses was most obviously focused towards an outside audience, concerning wall elaboration and house length.

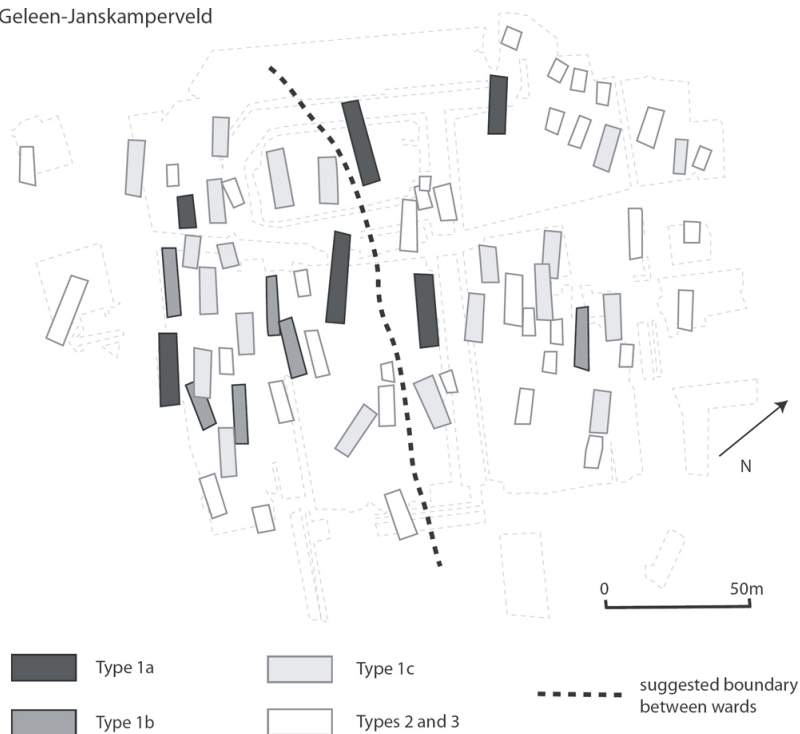


Figure 10.5. Plan of Geleen-Janskamperveld showing different house types. The enclosure is not shown (after De Grooth 2013, 129 fig. 3).

Looking at the wider context of tripartite buildings, type 1c houses are distributed more or less evenly, while those of type 1a and 1b cluster in the south-western corner. In turn, mono- and bipartite structures were most often found closer to the periphery of the excavated house clusters (Van de Velde 2007b, 226–7). In a preliminary report (Louwe Kooijmans *et al.* 2003, 380–1), the smallest and simplest structures (type 3) were interpreted as outbuildings for special-purpose activities, while the remainder were subdivided into yards, following the *Hofplatz* model. A rather different picture emerges if the site is divided into two so-called ‘wards’ – larger groupings of households which together formed a social unit, perhaps a moiety, as argued in the final report (Van de Velde 2007b; these are possibly similar to the ‘neighbourhoods’ or

'clans' identified at Vaihingen, south-west Germany; Bogaard *et al.* 2011). Alongside possible material culture preferences, such as amount of fine ware (Van de Velde 2007b, 237), there are differences in the spatial distribution of house types: more type 1b houses exist in the south (five) than in the north (one), while 12 type 3 houses in the north contrast with only three in the south. There may also be chronological patterns. If we accept the chronology proposed in Van de Velde (2007b, 226; see also Louwe Kooijmans *et al.* 2003), a striking picture emerges. The 1a buildings shifted from one ward to the other between phases. For Van de Velde (2007b, 238), this suggests a matrilineal transmission of the right to build such a structure, which in an exogamous and patrilocal society would result in a new location in each generation. Other interpretations, for instance a communal building at the centre of the site, remain possible (Louwe Kooijmans *et al.* 2003, 395; cf. Soudský 1969). Whatever the answer, it seems that 1a houses were connected to a status or position which was not inherited down the (patri-)line, but shifted between generations.

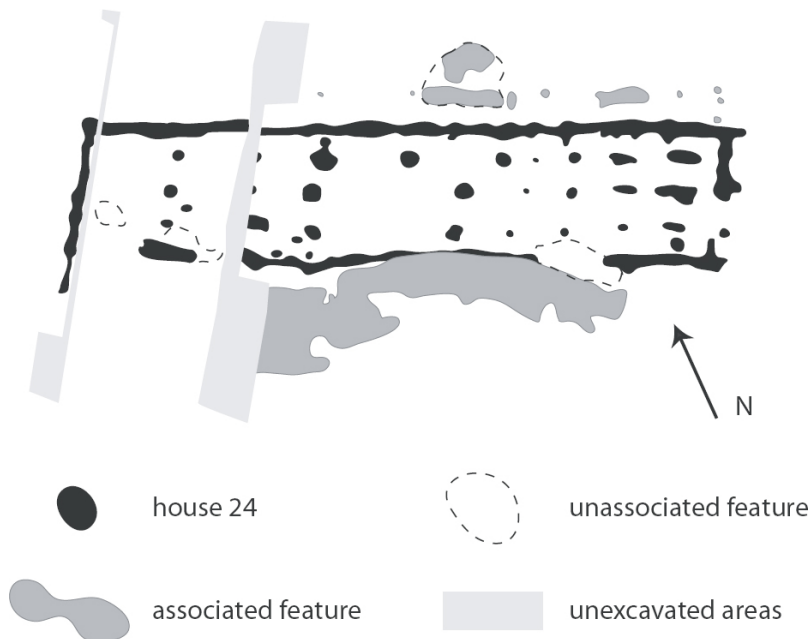


Figure 10.6. A type 1a house (house 24) from Geleen-Janskamperveld. Length c. 35m (after Van de Velde 2007c, fig. 29).

In this context, it is interesting to note that at Janskamperveld, all 1a houses, and only these, were burnt down at the end of their use life, showing unusually high levels of charcoal and burnt daub in their wall trenches and post pipes (Van de Velde 2007b, 238). This treatment is known from other sites across the LBK, although the data has never been systematically collected (but see Hofmann in prep); elsewhere, too, mainly large tripartite buildings were selected. At Janskamperveld, this highly theatrical and impressive treatment was deliberately limited to houses which also stood out architecturally.

In sum, the situation at Janskamperveld seems to epitomise the idea that a building needed to represent status in a way that was visible to all, on the outside. The longest houses are also those most elaborated architecturally, with wall trenches around the back parts or, in the case of the longest buildings, all-round. This

relates to the amount of work invested in such buildings – for type 1a houses, the wall trench was even dug much deeper than the posts supporting the roof (Van de Velde 2007c, 31), perhaps indicating a kind of ostentatious over-sturdiness. Finally, these houses were burnt in what is likely to have been a very public and impressive occasion. Yet internally, they did not differ from their less elaborate 1b or 1c counterparts, and there is no consistent indication that they had access to a greater range or greater amounts of goods. Indeed, after the first two settlement phases, the size distinction between 1a buildings and other tripartite houses is much reduced; 1a houses now only reach between 20.5 and 25.5m. While the preferential burning of 1a structures persisted, whatever status was conveyed by length alone was less clearly manifested.

Cuiry: house size and economy

Cuiry-lès-Chaudardes is located at the western edge of the LBK territory and dates to the very latest phase of this culture. As indicated above, the longest houses there show some differences to the *Großbauten* in other parts of the LBK. They only consist of what would elsewhere be called a central and a back part (Fig. 10.7) (Coudart 1998, 28–9, fig. 9), and the latter can be rather short with only one cross-row of three posts dividing it into two units. Houses of that type in Cuiry have a length of 14.5 to 20.8m, which is comparable to the so-called ‘*Bauten*’ or type 2 houses in other LBK regions. They are clearly separated from the small houses with a length mainly around 10m, ranging from 9.5 to 14.9m. The biggest houses at Cuiry have a rear part with two cross-rows of three posts forming three units. Their length ranges from 17.3 to 39m (Hachem 2011, fig. 126). House size increased over the three settlement phases, which might reflect demographic growth (Ilett 2012, 74). In both smaller and larger houses, the walls of the rear part were built either from a dense row of smaller

posts and wattle-and-daub, or from thin posts or planks standing in a surrounding trench.

The distances between all cross-rows, except the corridors, are nearly equal, which is reminiscent of the big houses of the Želiezovce group at the opposite end of the LBK territory, which also date to the latest phase. There, at Štúrovo, these large houses post-date the tripartite houses of the later Slovakian LBK, which still had several cross-rows of double posts in the front part. The granary function of these front parts was substituted by storage pits in the Želiezovce group (Pavúk 1994). It is most uncertain if storage pits also existed in Cuiry. The 40 isolated pits contained much fewer finds than the pits alongside the houses. Most of them are interpreted as possible clay pits for house construction. Only five isolated pits are round and small enough to have been used as granaries (Hachem 2011, 252), but this would be difficult to prove. Unfortunately, in Cuiry the botanical residues are very poorly preserved due to unfavourable soil conditions, and their small number does not allow quantification (Michael Ilett, *pers. comm.*). On the other hand, excellent bone preservation has yielded the biggest sample of animal bones for the LBK so far. Their intensive analysis showed that the large buildings with a rear section of two or three units were associated with a different pattern of faunal remains than the small houses. While in the large houses domestic animals dominate with around 90%, their proportion in the small houses is below 77%. Favourite species of both domestic and wild animals differ in the two house types, but there are also some large and small houses exhibiting a ‘mixed’ structure with about 80% domesticates and different associations of favourite animals (Fig. 10.8) (Hachem 2011, fig. 136). To sum up, at Cuiry it is not the structure, but the size of the building that matters and it is here linked with more intensive stock breeding and perhaps with the level of integration of the household into the wider community (Gomart *et al.* 2015).

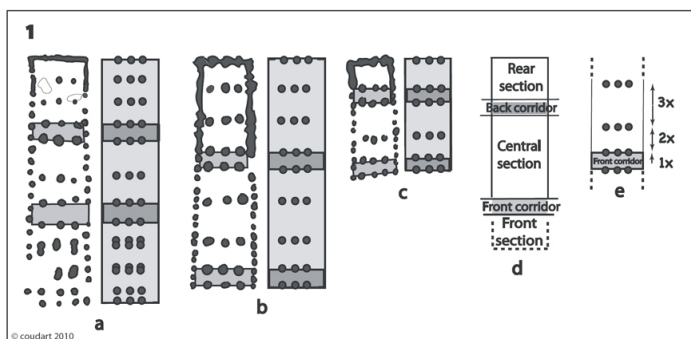
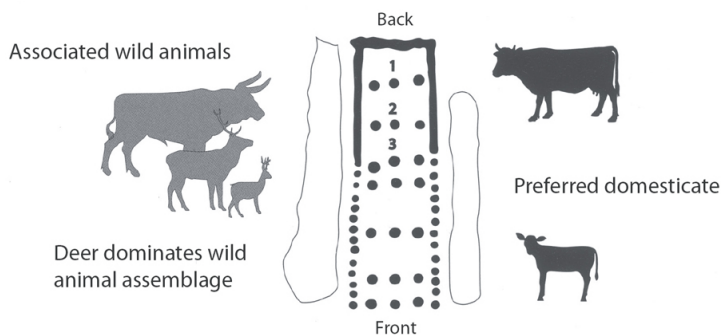
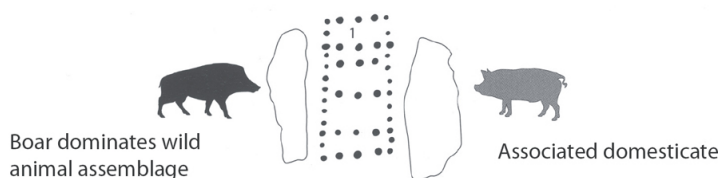


Figure 10.7. Bipartite house types of Cuiry-lès-Chaudardes (1b, c, e; 2a, b) compared to tripartite LBK Großbauten (1a, d) from Miskovice, Bohemia. (Coudart 2015, fig. 16.2; reproduced with kind permission of the author).

Herding dominant $\geq 90\%$
Large houses (2 or 3 rear units)



Higher proportion of hunting $> 23\%$
Small houses (1 rear unit)



'Mixed' houses, herding around 80 %
Large and small houses

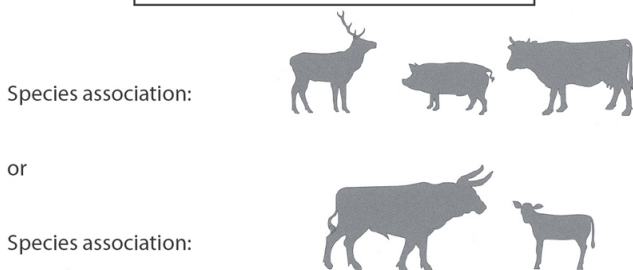


Figure 10.8. Stock breeding and game in relation to house size at Cuiry-lès-Chaudardes (Hachem 2011, fig. 136; reproduced with kind permission of the author).

Division of tasks at Mold

The recently published results on the economy of the Mold settlement come from a much smaller site than the previous examples, but with the big advantage of good preservation of both animal bones and botanical residues (Lenneis 2011a). The settlement existed for only about two centuries from the end of the earliest LBK up to the middle LBK. Among the 16 ground plans are four tripartite houses, two of them with a rather exceptional minimum length of 37m and 30.4m – the northern end is unclear in both cases. The front part consists of two (house 13) and four (house 1) cross-rows of double posts.

Eighty per cent of the faunal remains came from the surroundings of these two largest houses, the rest mainly from a bipartite house (house 10) and a small monopartite house (house 11). While the average-sized house 10 has a very special faunal structure with nearly no game and clear dominance of cattle, the two largest houses (1 and 13) and the small one (11) are much more similar to each other. Their comparison is very interesting. On the basis of the number of identified bones, domesticated animals make up 90% in the two large houses and 79% in the small house, but comparing the more important measure of bone weight, game makes up less than 10% in the small house and around 20% in the large houses (Schmitzberger 2011, 243–5, figs. 1–3) (Fig. 10.9). While the results based on bone numbers are similar, those on the basis of bone weight are in remarkable contrast to the situation at Cuiry-lès-Chaudardes.

The amount of botanical residues shows a very close relation to sample size, therefore the more interesting results are obtained by comparing finds density. By far the highest densities of cereal remains were registered for the largest house (house 1), closely followed by the small house 11, then by a burnt house. The density of residues for the second very large house (13) was approximately half of that for the small house (Lenneis 2011b, 334–6, fig. 4 a, b). Interestingly, house 1 had an exceptionally long southern part with a length of 18m. This could support the

hypothesis that cereals were stored on the upper floor of these houses. There are only a few more *Großbauten* with similarly large southern parts, and all occur from Bavaria and Bohemia eastwards (Lenneis 2003, Abb. 164).

Economic activity other than food production is only reflected by ceramics and stone implements. For both, the highest densities are not to be found around the biggest houses, but around the houses of medium size. It seems that the situation on this site indicates a sort of division of tasks between neighbouring households, but what role did the two largest houses play in the community?

First, we have to consider that the two largest buildings did not exist at the same time. Second, their size suggests a bigger number of inhabitants and therefore finds related to food production, especially animal husbandry, are higher than in the other houses. As a group, the people living in these large houses may have owned the biggest part of the hamlet's herds, but they do not seem to have had a different diet than the persons living in smaller houses. The exceptionally big southern part of house 1 and the high density of botanical remains around it may suggest cereal storage for more people than the inhabitants of this house. The question remains if the bigger number of people in this house, together with possible control over the main part of the herds and cereal storage, resulted in a special status for the house and its inhabitants (Hofmann 2012). Such roles may have changed in the later phase, when house 13 with its much smaller southern part was the biggest building and showed the highest importance of cattle breeding. Its inhabitants could have been the community's herders, but with a lesser role in cereal storage. In both phases, the people living in smaller houses fulfilled the remaining economic needs of the community.

Conclusion: the changing role of tripartite

buildings

Tripartite houses, for as long as they existed, formed a cornerstone of LBK social life. They may have performed communal functions or cemented a special status for their inhabitants. At Janskamperveld, some tripartite houses were additionally marked out in very public ways. Yet tripartition was only one possible parameter by which these concerns could be marked; economic choices and house size were as important in some cases, and indeed seem to have become more central over the course of the LBK. By the time Cuiry was established, classic *Großbauten* had become obsolete. A similar pattern can be observed at a local scale over the course of settlement at Harting, where partition and size were initially closely connected, only for this pattern to be subverted in the final phase. At Mold, the significance of the largest houses lies in their different economic role. Their inhabitants seem to have been the most important herders and maybe also stored the cereals for the community.

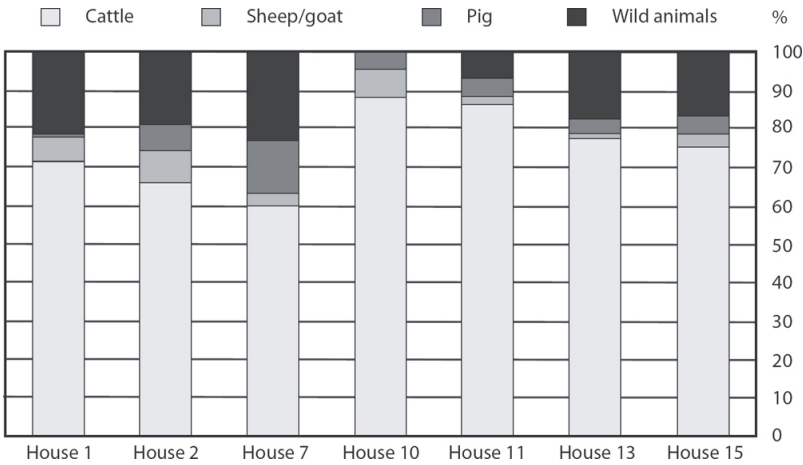


Figure 10.9. Relation of domesticated animals and game on the basis of bone weight at Mold (after Schmitzberger 2011, Abb. 3).

Therefore, within the overall and broadly shared framework of ‘the’ recognisably LBK longhouse (see also Bickle and

Kalogiropoulou, this volume), there was leeway in the relative importance of partition and size, as well as in how closely a given building style was connected to economic preferences. The basic vocabulary was similar, but specific performances and iterations differed. Building a longhouse was a huge investment of time and effort, and people were undoubtedly keen to maximise on the returns, citing in their own construction elements that were seen as successful – whether success was measured in a particularly valued way of organising activities, for instance through partition, or in going for as large a structure as possible. From this point of view, the way a tripartite building could be expected to function, and the goals and aspirations connected with it, were the source of considerable creative variation, historically situated and driven by diverging motivations. This diversification had longer-term consequences.

The late LBK relaxation of norms and experimentation with the architectural and social possibilities of the house paved the way for the transformation of longhouse society which was to come. With Coudart (2015, 322–3) we could argue that the availability of more options – monumental walls, front parts of different length and sturdiness, size classes – rendered the house more susceptible to change in more fundamental ways, but in various new guises it still persisted for several centuries after the end of the LBK. Indeed, it is probably its potential for difference, rather than any single function or meaning, which ensured the central role of the longhouse.

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Feasts and sacrifices: fifth millennium ‘pseudo-ditch’ causewayed enclosures from the southern Upper Rhine valley

Philippe Lefranc, Anthony Denaire and Rose-Marie Arbogast

In 2009, three pseudo-ditch (defined below) causewayed enclosures were discovered in Basse-Alsace, at the sites of Meistratzheim, Entzheim and Duntzenheim, providing the impetus for new research into this type of enclosure. Previously, this form of ditched enclosure was only represented in the southern Upper Rhine valley by the ditch section at the site of Rosheim ‘Sainte-Odile’, excavated in 1991 (Jeunesse 1996a; 1996b; Jeunesse and Lefranc 1999). The pseudo-ditch causewayed enclosures that flourished over much of Europe for two millennia have, with some

notable exceptions, seldom been recognised as such by archaeologists. Over recent years, however, rescue excavations of middle Neolithic enclosure systems in Alsace have identified various examples of this pseudo-ditch type of enclosure construction. The first-hand observation of pseudo-ditches in the field was achieved through the application of appropriate excavation techniques, such as excavating ditches in a chequerboard fashion to obtain a complete longitudinal profile. This contribution provides a brief overview of five of the enclosures excavated in Alsace between 2009 and 2013. It focuses on what the material evidence from the enclosure pseudo-ditches and accompanying features can tell us about the activities that took place at these monuments.

Rosheim type ‘pseudo-ditch’ enclosures

Pseudo-ditch enclosures of the Rosheim type were first characterised 20 years ago at the eponymous Rosheim ‘Sainte-Odile’ site (Jeunesse 1993; 1996a; 1996b; Jeunesse and Lefranc 1999). They are found across the Linearbandkeramik distribution, where they constitute the most frequent form of enclosure documented from the Paris basin to Saxony, and from Holland to Lower Bavaria (Boulestin *et al.* 2009; Schmidt 2005; Van de Velde *et al.* 2009).

Pseudo-ditches can be defined as enclosures formed of independent and discontinuous segments, oblong and morphologically varied, arranged along a predetermined path. We do not know precisely the pace of development of the segments, but we are certain that most of them are not contemporary, as the many observed recuts testify. We also know that the segments are rapidly refilled after being dug, as shown for example by the perfect preservation of the original shape of some segments, even in very unstable sandy soils. Thus, this enclosure type consisted of ephemeral structures in perpetual transformation (Fig. 11.1). It is

only the recurrent characteristic of a constraining ‘path’ – for example marked in the soil itself or by a palisade – which leads to the many recuts eventually giving the illusion of a continuous ditch when the monument is excavated.

The re-examination of enclosures with suggested discontinuous ditches attributed to the European middle Neolithic suggests that a number of them belong to the Rosheim type. Therefore, this form of enclosures continues throughout the fifth millennium cal BC, in the cultures of the post-LBK Danubian Neolithic (Fig. 11.2). We observe them in the Cerny, Oberlauterbach, Stichbandkeramik, Münchshöfen, Grossgartach and Rössen cultures and in the Epi-Rössen groups (Jeunesse 2011). To the east they are less frequent, as LBK-style enclosures are there replaced by *Kreisgrabenanlage*-type monuments. This form of monument appears in the Proto-Lengyel, retaining some of the pseudo-ditch characteristics. During the final third of the fifth millennium, the pseudo-ditch enclosure type is adopted in the Paris basin by the first groups after the end of the Danubian tradition (e.g. Noyen, Michelsberg I) and diffuses to the east (Michelsberg), the north (Spiere group), the west (Néolithique moyen II) and perhaps also to the south (Chasséen). The question of their persistence into the fourth millennium, in the middle and recent phases of the Michelsberg culture, in the Funnel Beaker culture (TRB) and possibly also in the causewayed enclosures found across the British and Irish Neolithic will hopefully be resolved in the future.

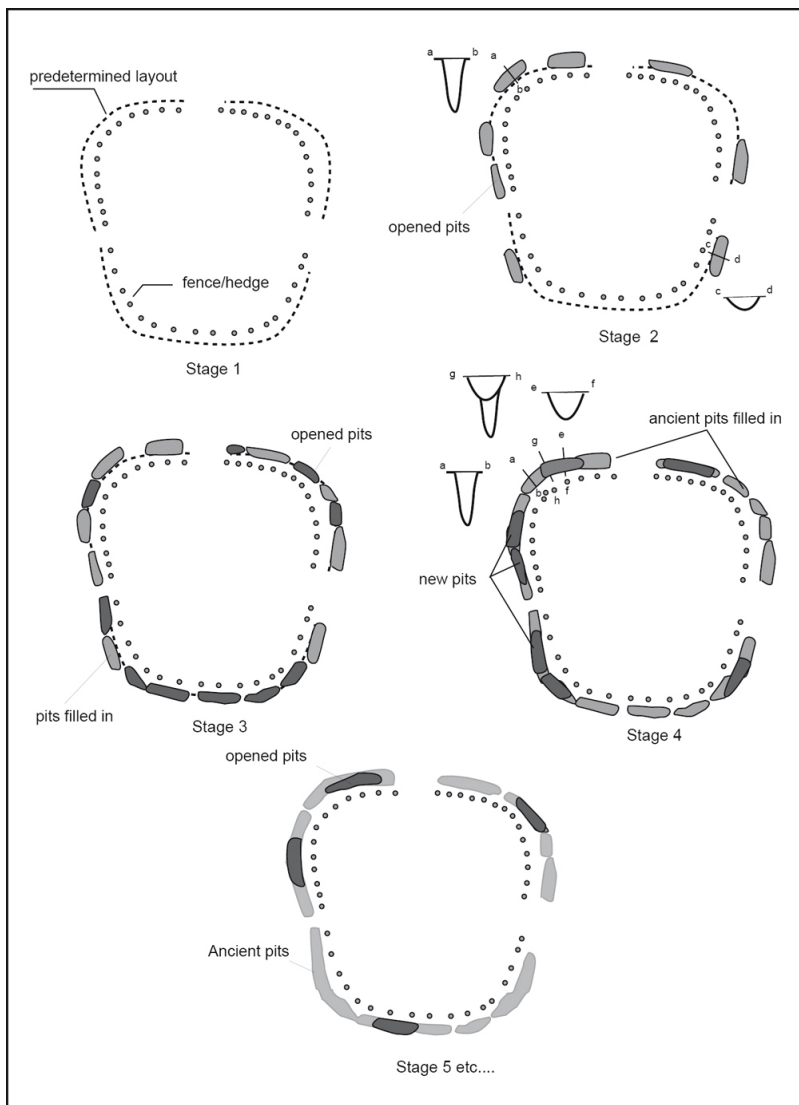


Figure 11.1. Evolutionary scheme of a 'pseudo-ditched' enclosure (after Jeunesse and Lefranc 1999).

The five enclosures presented here were discovered between 2009 and 2013. They cover all of the fifth millennium cultures, with the exception of the Grossgartach period. This millennium is characterised in Lower Alsace by a succession of stylistic groups,

namely Rössen, Bischheim, Bruebach-Oberbergen, BORS and Michelsberg *ancien* (Fig. 11.3). Some enclosures were used for relatively short periods and produce artefacts belonging to a single group; this is the case at Vendenheim, Meistratzheim and Schwindratzheim, which date to the Planig-Friedberg/Rössen, Rössen and Bischheim respectively. The others, Duntzenheim and Entzheim, persisted over longer durations and produced finds attributable to successive stylistic groups (Fig. 11.4).

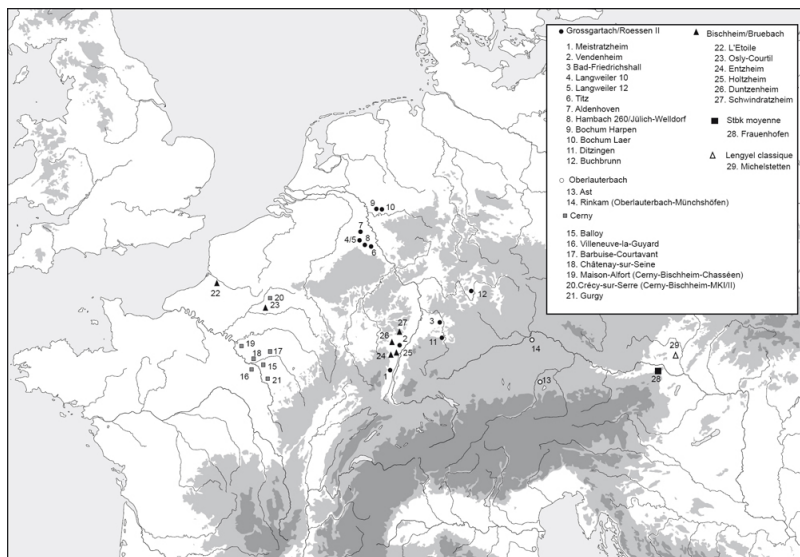


Figure 11.2. Distribution of ‘pseudo-ditched’ enclosures in the first half of the fifth millennium cal BC in Europe.

The fifth millennium enclosures of the southern Upper Rhine plain

Vendenheim ‘Aux portes du Kochersberg’

The Vendenheim enclosure, excavated in 2011, is formed of two parallel ditches, spaced 4–5m apart, of which only a 50m segment is known (Fig. 11.5). The interruption observed in the section oriented north-west–south-east and immediately west of the corner can be identified as an entranceway because gaps are present in

both the internal and external ditches. The monument is difficult to interpret, as high levels of erosion have resulted in less than 30cm of the features being preserved. The pseudo-ditch was constructed by digging short sections together, either end-to-end or partially overlapping. This structure is well illustrated by the longitudinal section 201, which is composed of at least five separate sections.

The finds from the pseudo-ditch consist of only a few fragments of animal bone and pot sherds, with decorative motifs attributed to the end of the Grossgartach (Planig-Friedberg) and Rössen *ancien* (as defined by Spatz 1996).

Meistratzheim ‘Station d’épuration’

The Meistratzheim enclosure is composed of three discontinuous pseudo-ditches, more or less parallel with each other (Perrin 2011). Only the north-west corner of the enclosure has been excavated (Fig. 11.6), but two geomagnetic surveys have been carried out in the adjacent areas. The results show that the westernmost ditch extends more than 350m to the south. The south-west corner remains to be discovered. It is possible that, like many of the Paris basin enclosures, the river flowing immediately to the east of the site formed part of the Meistratzheim enclosure.

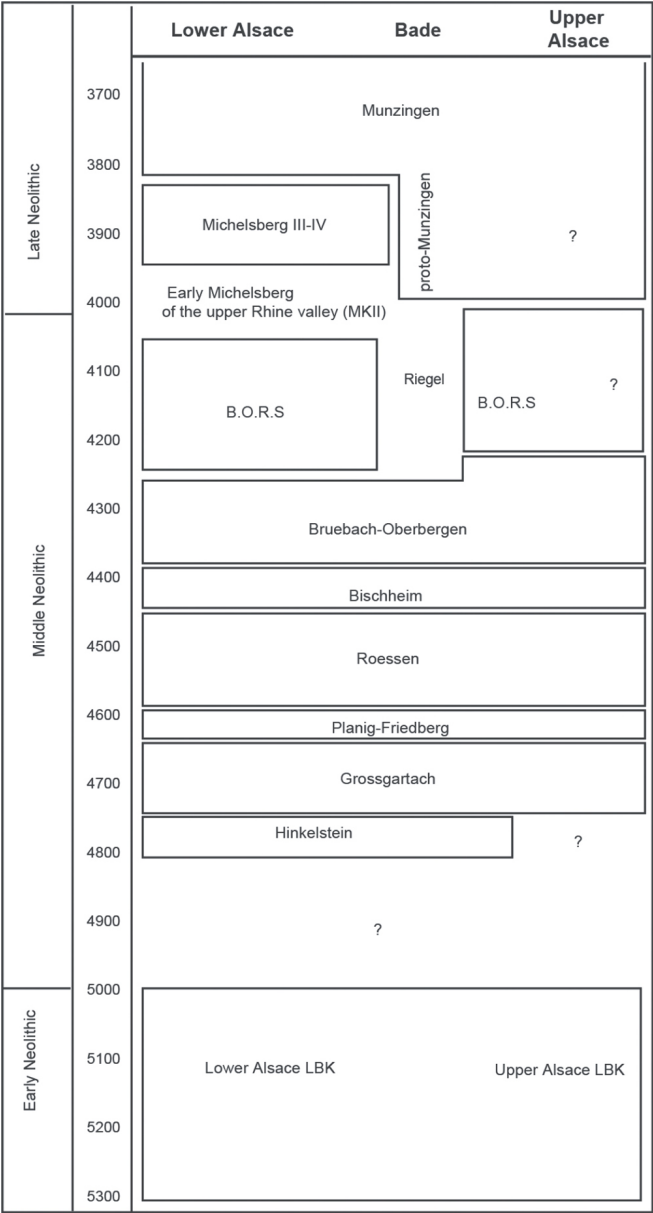


Figure 11.3. Simplified chronological sequence of the Neolithic cultures in the southern Upper Rhine plain (5300–4000 cal BC).

In both locations, the pseudo-ditches have interruptions (at the

enclosure corner and c. 30m east of the corner), interpreted as possible entrances. Over the cumulative length of all three ditches (c. 410m), a minimum of 73 segments can be identified, with numerous recuts observed. The individual segments show a great diversity in terms of their dimensions and section profiles. Two main categories can be identified, which are also known at other Alsatian enclosures: V-profile (*Spitzgraben*) or U-profile (*Sohlgraben*). The length of the segments is fairly variable, ranging from 1.15m to more than 9m. These lengths refer only to the segments which are known in their entirety. It is difficult to assess the length of older cuts, which were partly destroyed by subsequent recutting. Extrapolating from this, it is possible to suggest that the average length of a segment was c. 4–5m.

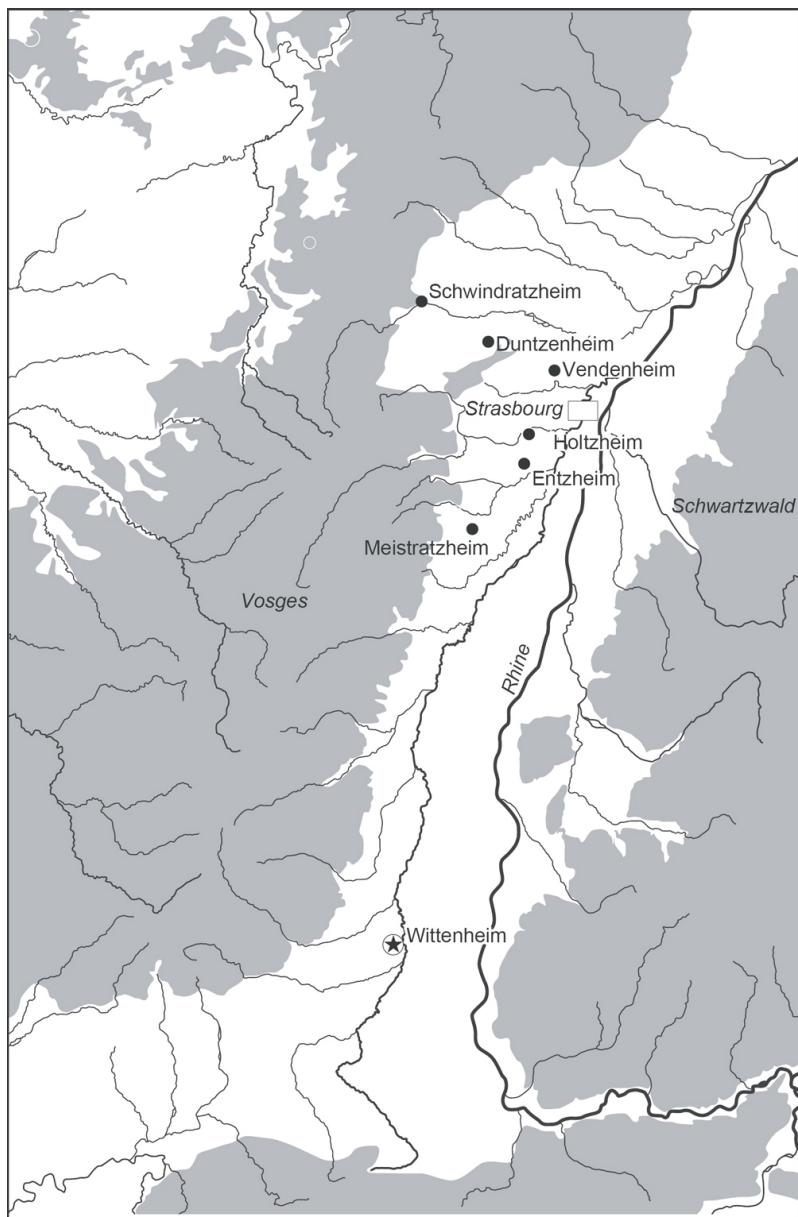


Figure 11.4. Distribution of Alastian enclosures mentioned in the text.

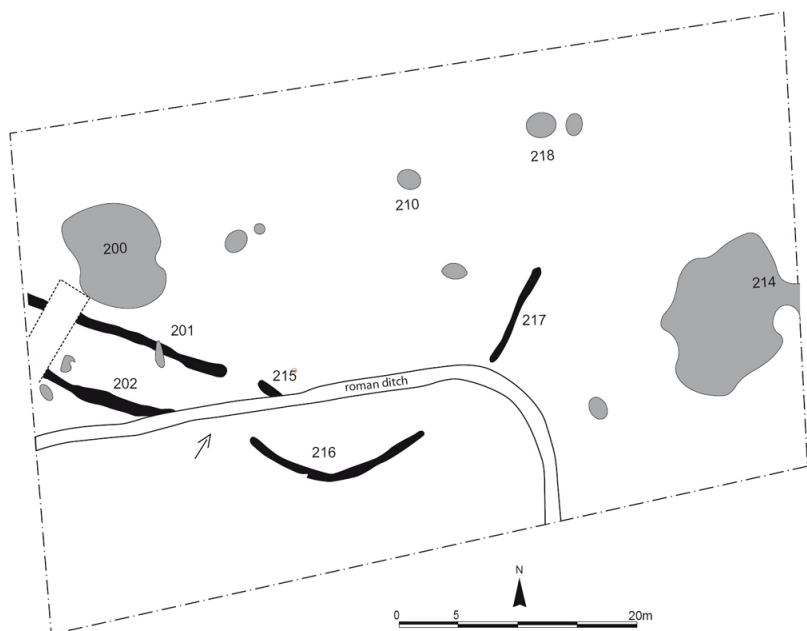


Figure 11.5. Plan of the Planig-Friedberg/Rössen period enclosure at Vendenheim 'Aux portes du Kochersberg'.

The enclosure only contained a small quantity of finds, which had an eroded appearance and consist mainly of undecorated sherds, some animal bones and very few flint and polished stone tools. Nonetheless, the decorated ceramics can be reliably attributed to the Rössen group (Denaire 2009). Four pits, located close to the areas of the pseudo-ditches that produced finds, can be attributed to the same chronological horizon; one of these pits (pit 116) contained the remains of at least 13 decorated vessels, four undecorated pots, a fragment of burnt stone bracelet of irregular form and 833 fragments of animal bone (discussed below).

Schwindratzheim

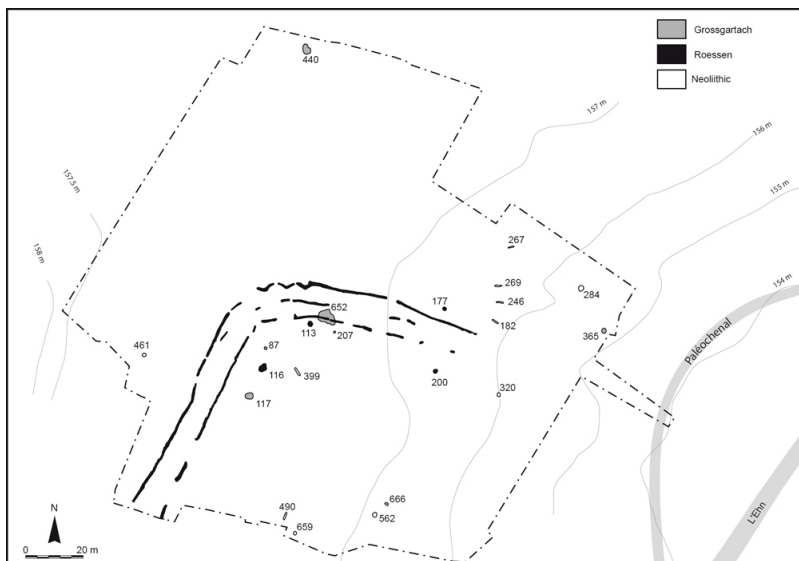
The site of Schwindratzheim was excavated in 2013 and is still under study (Denaire *et al.* 2014). The c. 30m long pseudo-ditch

(Fig. 11.7) can be attributed to the Bischheim group. The path of the enclosure is difficult to identify as it cuts and is cut by numerous other features. Nonetheless, it is possible to reconstruct the plan of the pseudo-ditch through mapping the distribution of Bischheim sherds.

Further to the north, the enclosure is not preserved due to severe erosion, the impact of which was compounded by the shallow nature of the ditch, which is often less than 0.8m deep. The enclosure continues to the south, beyond the limit of excavation. At this end, the ditch appears to terminate in a pit, also attributed to the Bischheim group. Unfortunately, it was not possible to verify whether this pit was situated in a gap in the enclosure ditches, which could signal the presence of an entranceway. Although the paths the ditches took are only partially known, it is likely that the enclosure ran all the way up to the river, which runs to the south of the site.

The character of the discontinuous ditch system and the variability in the form of the recuts, sometimes in U- and sometimes in V-profiles, leave no doubt that this enclosure is of the Rosheim type. The eroded nature of the pseudo-ditches extends to the finds assemblage, which is composed of a few sherds. Animal bone fragments have been discovered, but it is difficult to obtain reliable dates from them because the segments of the enclosure ditches recut many LBK pits and the bones are therefore possibly residual. However, sections of a canine skull and possibly an associated half-mandible could come from the Bischheim group (^{14}C date submitted).

Several pits contemporary with the monument were discovered at the site, notably two silos situated a few metres from the enclosure which contained a large bone assemblage. Finally, two graves attributed to the Bischheim group were found approximately 80m to the north-west.



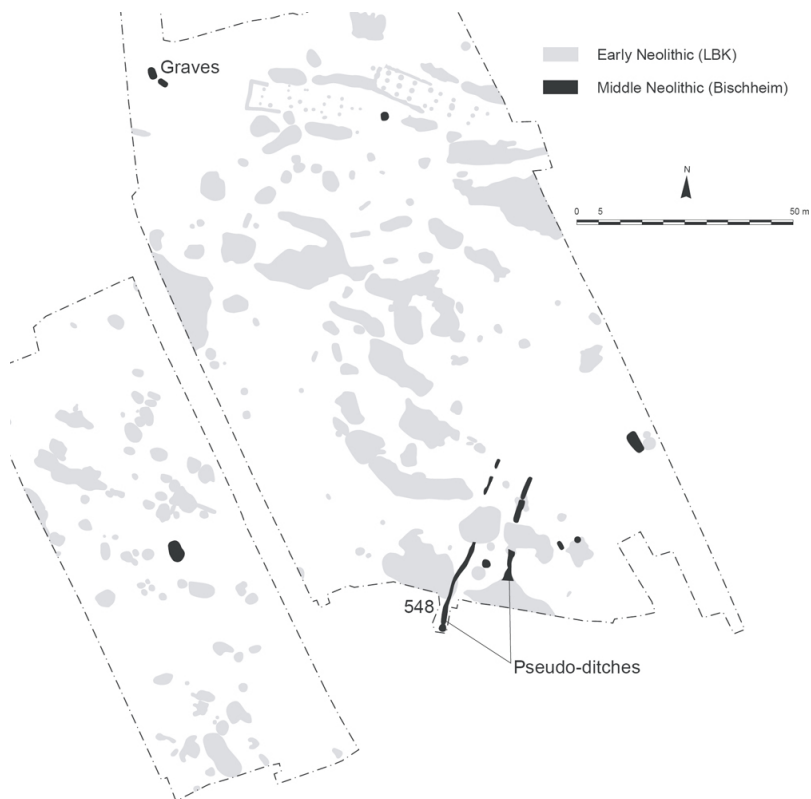
Duntzenheim 'Frauenabwand'

The complete plan of the Duntzenheim enclosure is known from a geomagnetic survey, which suggests that it was a c. 125m long sub-quadrangular ditch with rounded corners (Lefranc 2011, Lefranc and Jeunesse 2012). The pseudo-ditch is interrupted by four gaps of unequal length, which are interpreted as entrances (Fig. 11.8). The analysis of the ditch sections identified more than 40 distinct segments, which must be partly diachronic as overlapping is observed. The shorter segments are about three metres and the longest more than 12m. Among the easily identified individual segments, the average is between four and six metres. The gaps or entrances appear to be located on or close to the cardinal points, a practice which is characteristic of the *Kreisgrabenanlagen* monuments of central Europe (Petrasch 1990). We do not wish to suggest that this monument be thus classified, but we do question whether there was a possible eastern influence

on the layout of the Duntzenheim enclosure. A similar hypothesis has been proposed for another Alsatian monument, Wittenheim 'Route de la Forêt', which is thought to have been influenced by Epi-Lengyel enclosure forms (Lefranc and Jeunesse 1998).

Approximately 60m of palisade have been identified, located about three metres inside the enclosure ditch. It is composed of 14 identifiable postholes, spaced out and arranged in a line parallel to the pseudo-ditch. In the best preserved palisade sections, there are regular intervals between postholes of 2.5–3.5m, the majority falling between 3–3.5m. Such gaps suggest that the palisade did not have a functional role (e.g. as fortification or animal pen). Enclosures with well-spaced posts are relatively few in number: they are known from the LBK sites at Darion (Cahen *et al.* 1990), Erkelenz (Schmidt 2005) and Voroux-Goreux (Goffioul *et al.* 1999). However, the most telling example is that of Wittenheim 'Route de la Forêt' in the Upper Rhine area (Lefranc and Jeunesse 1998), which is a fifth millennium cal BC enclosure belonging to the *Kreisgrabenanlagen* tradition, composed of posts spaced an average of 3.15m apart. At Wittenheim, as at Duntzenheim, one can without doubt talk of a symbolic palisade (Behrends 1984; Lefranc and Jeunesse 1998).

The Duntzenheim enclosure, dated on the basis of the few sherds found in the ditch segments, as well as the find assemblages from the pits located inside the enclosure, is attributed to the Bischheim rhénan/Bruebach-Oberbergen horizon. Five unequally represented categories of finds are present: stone tools, of which there are only three; ceramics, mainly represented by erratically distributed small sherds; querns and grinding stones; faunal remains, essentially represented by pig mandibles (discussed below) and the remains of dogs; and, finally, very numerous limestone or sandstone fragments showing traces of heating and fire, which we interpret as cooking stones.



Cross-sections of the section 548 of the pseudo-ditches system

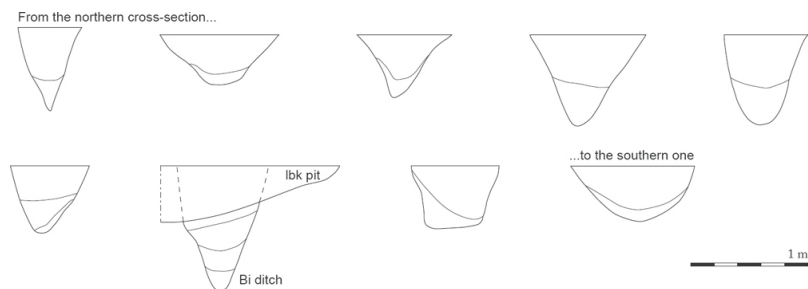


Figure 11.7. Plan of the Bischheim period enclosure at Schwindratzheim and its pseudo-ditch sections.



Figure 11.8. Plan of the Bischheim/Bruebach-Oberbergen period enclosure at Duntzenheim 'Frauenabwand'.

Entzheim 'Les Terres de la Chapelle'

The portion of the Entzheim enclosure that has been studied (Lefranc and Jeunesse 2012) is composed of an oval or sub-circular 'pseudo-ditch' with an estimated diameter of c. 155m (east-west oriented) and a sub-divided interior surface (Fig. 11.9) – a pattern also attested at other 'pseudo-ditch' enclosures in the classic Bavarian Münchshofen tradition, e.g. the enclosure at Riedling (Husty and Meixner 2009).

At Entzheim, the majority of the sections appear to be constituted by the juxtaposition of recuts, between four and eight metres in length (Fig. 11.10). The majority of the segments are

about five metres long. The study of the transverse and longitudinal sections from c. 280m of the ditch identified more than 60 oblong segments. The profiles of the segments are U- and V-shaped, similar to those found at Vendenheim, Meistratzheim, Duntzenheim and Schwindratzheim. Generally, the segment fills, which have little or no stratigraphy, are composed of homogenous layers of mixed loam and sand. Wall collapses are infrequent along the entire length of the pseudo-ditch, which suggests that the segments were quickly and intentionally filled shortly after they were dug. This practice is even clearer at this site than at others, as the segments were dug into the sand and loam substrate, which is very unstable.

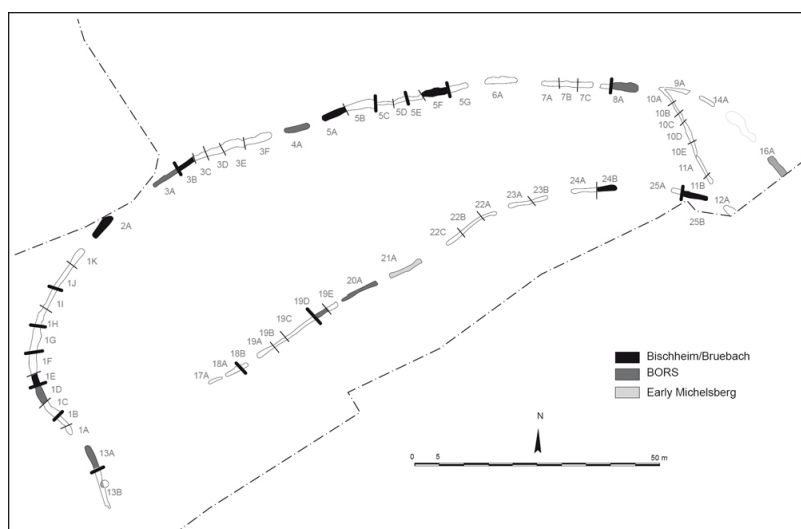


Figure 11.9. Plan of the Bischheim–BORS enclosure at Entzheim ‘Les Terres de la Chapelle’.

Finds were sparse. Faunal remains were strongly weathered and nothing was observed that could be interpreted as deliberate deposition of material. The decorated ceramics suggest the enclosure was used from Bischheim rhénan to the Bischheim occidental du Rhin supérieur/Michelsberg ancien horizon, which constitutes nearly half a millennium. The area enclosed by the

‘pseudo-ditch’ contained a few contemporary pits, unfortunately eroded, and arranged in a manner similar to that of Duntzenheim (see above). Several small burial groups dating to the second half of the fifth millennium were found outside of, but adjacent to, the enclosure (Denaire and Lefranc 2014).

Ephemeral pits, sacrifices, trophies and ceremonial feasts

The question of the purpose of enclosures has already been discussed by numerous authors (e.g. Andersen 1997; Jeunesse 2011; Whittle *et al.* 1999), whose work has demonstrated that we cannot be satisfied with simple explanations and that the list of activities present at such sites across Europe is far too diverse to be reducible to a single model. Here, we discuss two of the Alsatian enclosures (Duntzenheim and Meistratzheim) and their find assemblages to propose a series of ceremonial acts that may have taken place at enclosures.

Within the corpus of proposed pseudo-ditched Rosheim-type enclosures in Lower Alsace, several produced limited finds (e.g. Entzheim, Meistratzheim and Schwindratzheim), while others contained faunal remains (e.g. Duntzenheim) and others still, rare human remains (e.g. Holtzheim) (Lasserre *et al.* 1999). The only factor which these enclosures share, once the functional hypotheses of fortification or cattle pens have been discarded, is their status as a gathering place – a concept which was suggested much earlier in the British causewayed enclosure literature (Smith 1965) and which emphasised the political and ceremonial nature of activities at enclosures.

The central activities taking place at these enclosures, or rather, the acts that we are best able to identify, are the digging of new ditch segments on a predetermined route, probably identified by an interrupted pseudo-palisade, as at Duntzenheim. It is difficult to explain this activity, which would have made sense

within a symbolic system which is currently poorly understood. The only tentative interpretation evoked is that the independent segments of the enclosure symbolised the different segments of the society itself. In this explanation, each ditch segment can be understood as a metaphor of a particular social group (clan, village, lineage etc.) involved in the creation of a collective monument, itself symbolising the unity of society. This proposal, adopted by Andersen (1997) for the interpretation of the late Funnel Beaker Sarup enclosure, Denmark, was also suggested for causewayed enclosures of the early British Neolithic (Avery 1982; Pryor 1988; Whittle *et al.* 1999). This hypothesis is attractive, but reductive, as clearly the purpose was not to create a complete enclosure, or a single specific project; each segment was quickly resealed after opening, a process that was sometimes repeated over several succeeding generations. The monument was never 'finished' and, therefore, the *process* of creating, refilling and recutting the pseudo-ditches appears more relevant than the final form of the monument itself. The causewayed enclosure as an 'ongoing' project has been previously suggested by Evans (1988) and Edmonds (1999) in the British context, an idea elaborated by Barrett (1994) in the context of the Wessex henges. Barrett (1994, 23) articulates this point particularly well: '[The monument] originated neither in the idea nor the plan, but rather in the practice and in the project'.

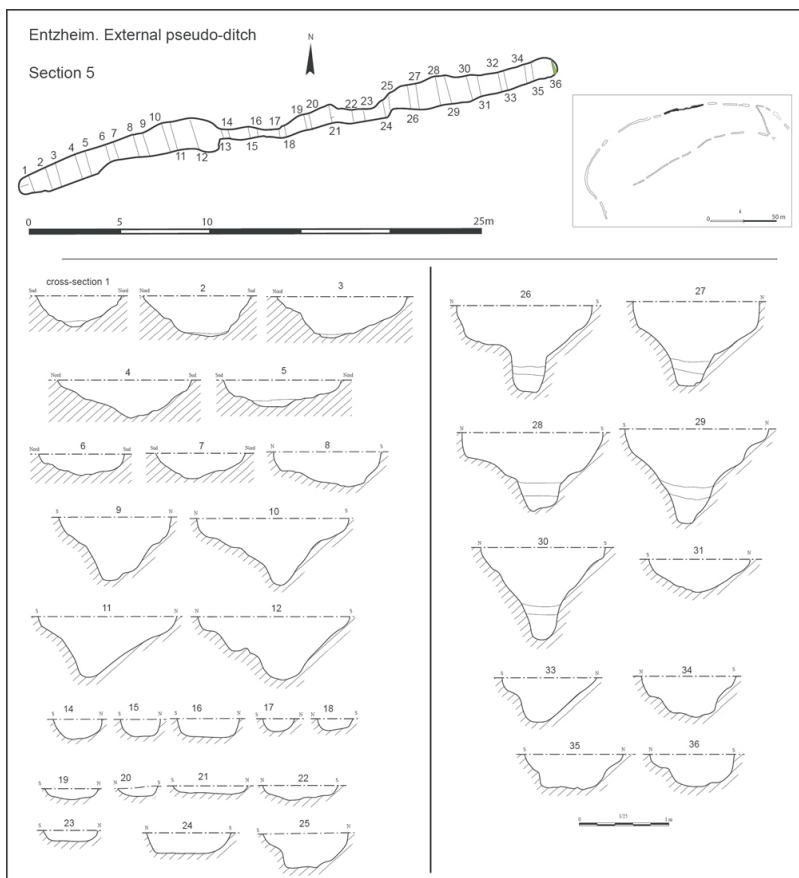


Figure 11.10. Section five of the Entzheim ‘Les Terres de la Chapelle’ enclosure, showing its constitutive segments and pseudo-ditch sections.

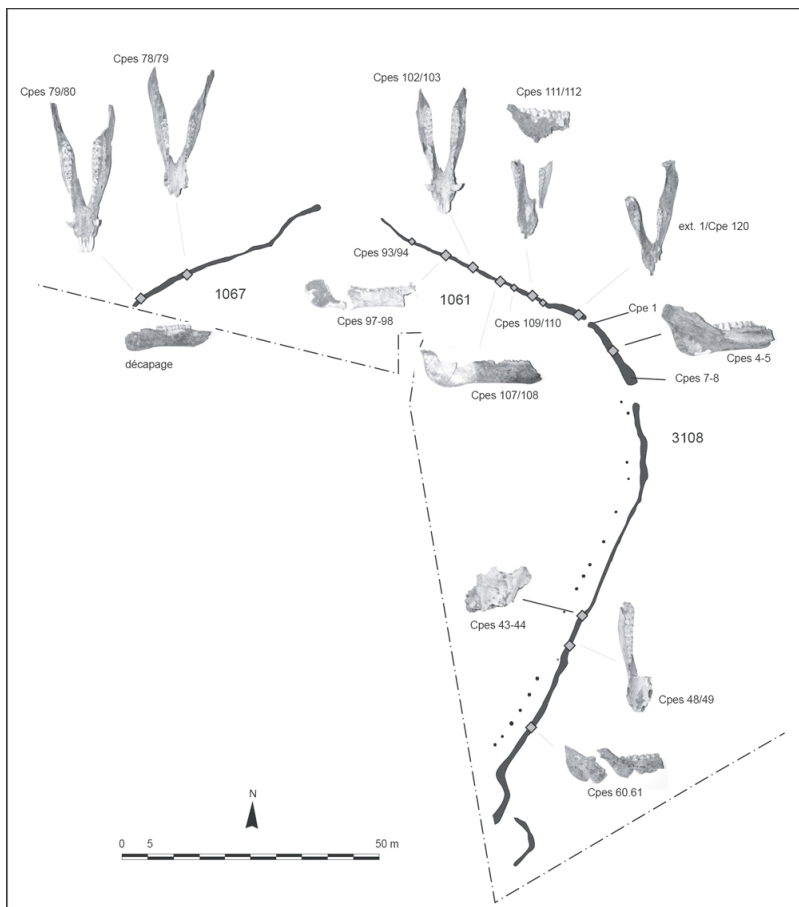


Figure 11.11. Distribution of pig mandibles at Duntzenheim 'Frauenabwand'.

The suggestion that pseudo-ditched enclosures provided a framework for large ceremonies is now well accepted by many researchers (Andersen 1997; Augereau 2010; Boelicke 1988; Jeunesse 1996a; 1996b; Testart 2012; Whittle *et al.* 1999). Direct details of these ceremonial activities are, however, few and difficult to interpret.

The assemblage of pig mandibles deposited at the Duntzenheim enclosure (Fig. 11.11), however, allows us to advance some arguments in favour of the ceremonial hypothesis

(Guthmann and Arbogast 2011). In total, the ditch segments contained complete mandibles from a minimum of 12 individuals (six females, two males and four unsexed). This part of the skeleton is very significantly over-represented at the site (70% of the assemblage), without doubt the result of deliberate selection. The deliberate selection is also visible in the manner in which the mandibles entered the ground. The mandibles were deposited with both sides of the jaw still joined at the symphysis, which is contrary to what is frequently found in butchery practices. The presence of cut marks on or fracturing at the mandibular *ramus* also confirms that the disarticulation practices were focused on acquiring this particular part of the carcass.

We suggest that these mandibles can be identified as 'sacrificial trophies', taken from animals ritually killed at gatherings which were accompanied by what we define as sacrificial meals. Features associated with fire found at Duntzenheim, which are echoed by the hearths filled with charred stones documented at the Cerny culture enclosures at Balloy (Mordant 1992) and at Gurgy (Meunier *et al.* 2012), also suggest ceremonial activities; these features are likely to have been involved in the cooking of large amounts of food for collective consumption rituals (Vaquer *et al.* 2003). The deposition of complete sheep/goat, cattle and pig skeletons (sometimes in a prepared state) could represent a portion of feasts reserved for supernatural entities. Examples of this practice are particularly known from Boury-en-Vexin (Ménier 1987), but also at Neckarsulm-Obereisesheim (Arbogast 1998; Seidel 2008), Mairy Les Hautes Chanvières and Maisy-sur-Aisne (Arbogast 1998); and could also be the case for complete carcasses of dogs, pigs and sheep/goats from Windmill Hill (Whittle *et al.* 1999).

The sacrificial feast hypothesis is supported by the over-representation of pig mandibles in the pseudo-ditches at Duntzenheim. These specific anatomical elements were probably selected because they are immediately identifiable as pigs; they

are the signature of the species. Similarly, recognisable elements such as bucrania and mandibles were deposited at Menneville (Farruggia *et al.* 1996), Balloy (Mordant 1992), Bazoches (Dubouloz 2004), Neckarsulm-Obereisesheim (Arbogast 1998) and Bruchsal (Behrends 1991). Outside the immediate geographical area, there are also the cattle skulls from the Windmill Hill enclosure (Whittle *et al.* 1999) and, to the north in the Funnel Beaker culture, dog skulls at Bjerggard, cattle skulls at Hygind and pig skulls at Sarup (Andersen 1997).

The Duntzenheim pig mandibles were probably not deliberately deposited in the ditch segments. As many historical and ethnographic examples attest, it seems more likely that such sacrificial trophies were systematically and ostentatiously exposed to demonstrate the permanence of the sacred. Testart (2010) has interpreted the many bucrania found in the houses at the Çatalhöyük tell in this way. In Classical Greek art, the depiction of bucrania decorated with floral garlands, on vases and in *bas-reliefs* adorning sanctuaries, is thought to have symbolised the sacrificial act. Selected anatomical parts were also stored and exhibited, such as goat horns ‘accumulated in the shrines of Artemis and Apollo’ (Burkert 2011, 135).

Ethnography offers numerous examples of sacrificial trophies being put on display: among the most famous cases are the bull horns and mandibles adorning the façades of Toraja houses on the island of Sulawesi, or the striking example of the Nias Islanders, Indonesia, who displayed pig jaws in their houses. In both cases, the selected parts of the animal commemorated the sacrifices offered by elite families, for whom the number of animals displayed was a matter of honour (Testart 2010). In the Melanesian archipelago, Malinowski (1932, 171) reported that after the consumption of a pig ‘the relics of a feast such as pig’s jaws and fish tails, are often collected and displayed in houses or yam stores’. In Vietnam, in the Mnong region, bull horns from the many buffalo sacrificed on the occasion of the ‘Great Feast of the

soil' are 'laid on top of each other and squeezed between three pickets' to form 'a kind of wall facing the sun' (Condominas 1974, 283). On the Siberian tundra, the main sacred space for the Nenets people is marked by an accumulation of sacrificed reindeer (Stépanoff and Zarcone 2011). Finally, we can also point to the 'sacred fence' of the Ainu, Hokkaido island, where the sacrificed bear skulls are exposed on long poles (Leroi-Gourhan and Leroi-Gourhan 1989).

In summary, we believe that at Duntzenheim, skeletal elements were taken from animals killed during ceremonies, which, along with the sacrificial feast and the digging of one or more new segments of the pseudo-ditch, perhaps symbolised the different social groups involved in the course of the ceremony. As outlined in the ethnographic and historical examples briefly noted above, the sacrificial trophies were most likely exposed near the enclosure pseudo-ditch, perhaps mounted on the posts of the pseudo-palisade, indicating the sacredness of the place. Only a small number of these mandibles would have then made their way haphazardly into the segment fills.

The animal bone assemblage from Meistratzheim pit 116 can also be interpreted in this fashion, i.e. as the remains of the ceremonial events at enclosures and the practice of 'sacrificial trophies'. This assemblage consists of the remains from five or six pigs, particularly represented by the shoulders and thighs, and the partial remains of two cattle. The many re-fitting bones from the assemblage suggest that the animal remains were deposited in a single event. The pit, therefore, contained the remains from a significant quantity of meat, probably consumed during a single episode, bringing together a large number of participants, and can hence be defined as a banquet or feast. This explanation could also be extended to the remains of 13 decorated vessels found in the pit, which may have been the 'relics of a sacred act' (Burkert 2011), themselves becoming ritually significant and hence sacrificed, with the animals, in a 'sacred' space. These features are

also characterised by a complete lack of mandibles and maxillas. It is, therefore, tempting to interpret their absence as signalling the practice of selecting mandibles as 'sacrificial trophies', as suggested for Duntzenheim. Taken together, the evidence from the Meistratzheim and Duntzenheim enclosures suggests a regional tradition whereby in Alsace the pig plays an important role in ritual practice, from at least the Rössen period onwards.

The characteristics emphasised at Duntzenheim and Meistratzheim are interpreted as strong evidence of ceremonial activities centred on the practice of sacrificial feasts, which brought together all members of a social group. However, they do not appear at Entzheim, nor at Schwindratzheim or, as yet, at the majority of pseudo-ditch enclosures identified in Europe. In this paper we have identified two main factors for the great heterogeneity of practices observed at pseudo-ditch enclosures. First, we highlight the likely variability of aspects of ritual in time and in space. Second, the status of 'ritual waste' (probably accounting for most of the assemblages discussed here) is also likely to have varied. Such material could have become sacred through use in ceremonial practice, but its presence in ditch fills sometimes seems more the result of random processes (e.g. at Duntzenheim) than of a codified body of ritual actions.

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time with family...

From Neolithic kings to the Staffordshire hoard. Hoards and aristocratic graves in the European Neolithic: the birth of a ‘Barbarian’ Europe?

Christian Jeunesse

Introduction

Alasdair Whittle’s major survey works, diachronic and ‘without borders’, have long been a precious source of inspiration for me. It is my pleasure, as a tribute to his fertile intuitions, to dedicate to this creative researcher this essay on a topic which sounds like an oxymoron: Neolithic aristocracies.

Among all the discoveries from late prehistory, hoards and elite graves have generated the largest amount of research.

Initially, they were considered in isolation, but more recently, encouraged by German researchers focusing on the Bronze Age, the archaeological context has increased in significance. Although the first occurrence of the hoard phenomenon dates back to the Upper Palaeolithic and the fifth millennium in Europe already provides a significant hoard corpus, most works on the subject are by Bronze Age specialists. The development of synthetic research on the meaning of Neolithic and Chalcolithic hoards is quite recent. This advance follows a growing interest in elite graves, demonstrated by the research carried out over the last 20 years at emblematic sites such as Varna, Maikop and Carnac. Hoards and grave goods from the Neolithic and Chalcolithic have long been studied as two separate entities. Only with Hansen's (e.g. 2013b) work on the Chalcolithic did the idea emerge that these two categories could form a single system, which was likely to have followed the same rules as those acknowledged for the Bronze Age.

This progress has long been restricted to the Chalcolithic and research on Neolithic hoards has more or less been neglected, except for a few discussions on the social and historical significance of hoards (Jeunesse 1998). However, the hoard-grave good relationship has not been directly dealt with. Credit goes to Pétrequin and co-researchers for bringing new perspectives to this field with the *Project Jade*, their research project on Alpine rock axeheads. For the first time in a Neolithic context, the nature of the relationship between a collection of hoards and a series of grave goods found in elite graves, namely the so-called Carnac tumuli discovered in southern Brittany, was raised (Pétrequin *et al.* 2012a). Axe and adze hoards from the Danubian Neolithic (Jeunesse 1998) and hoards of Alpine axes testify to the existence of large quantities of hoards in cultural contexts in which metallurgy was unknown. These Alpine axes also suggest the existence, in pre-metallurgical contexts, of a combination of elite graves and hoards of precious goods, a configuration that was long

believed to have existed only in the Chalcolithic, Bronze or Iron Ages.

The historical consequences of these observations are still barely investigated. Yet they open up the possibility of questioning the relevance of the causal relation between the emergence of metallurgy and some assemblages often classed as ‘complex’, such as aristocratic tombs and hoards of precious goods. Even though Hansen (2013b) elaborated the convergences between the middle and late Chalcolithic (fourth and third millennia cal BC) and the Bronze Age in detail, he never breached the ‘glass ceiling’ that stands between the Neolithic and the Chalcolithic. Others, however, have made that step, establishing the link and paving the way to new questions.¹ The three major occurrences of aristocratic graves in the Neolithic–Chalcolithic period, namely the Carnac graves (around 4500 cal BC), Varna’s richest tombs (c. 4600–4500 cal BC) and the eponymous grave of the Maikop culture (3700–3500 cal BC), are all (chronologically) associated with intensive hoarding practices forming three sets of ‘princely’ grave(s)/hoards of precious goods, which one cannot help but compare to those known in the Bronze and Iron Ages. This paper will discuss the significance of these parallels between earlier and later periods and debate the following hypothesis: that the pairing of elite grave/hoard of precious goods, and the dialectical relationship between them (as it has been described for the Bronze and the Iron Ages), reflects a social configuration that originates in the Neolithic and endures quite unmodified through the Chalcolithic and the Bronze and Iron Ages, as well as into the pre-literary and pre-Christian European societies of the first millennium AD.

Hoard and elite graves: Bronze Age and Iron Age

Hoard

European Bronze Age and Iron Age hoards have long been

interpreted as the deposition of commercial goods or as stocks of raw material. The research carried out over the last half century, mainly in Germany (summarised in Hänsel 1997; Hansen 2012), has pointed out that these interpretations, although still plausible in some cases, cannot explain the great majority of the discovered hoards. Today the issue is settled: whether on dry land or in rivers, lakes and bogs, hoards are offerings to supernatural forces, of which the depositors are asking a favour or which they are thanking for some benefit. The objects that compose the hoard are thus goods used within a frame of transactions between humans and the world of the gods, the spirits or the ancestors. Hoards display great variability, both in composition and in the quantity of goods that they contain. They can consist of whole or fragmented, everyday or exceptional objects. Consequently, hoards form a very wide field of research, so complex that it cannot be summed up in a few lines. Discussion here focuses on the relationship between hoards and the grave goods from elite tombs, and in particular on the types of objects or assemblages that are as likely to turn up in graves as they are in hoards. For the Metal Ages, this category is mainly composed of weapons and metal ornaments. An important distinction exists between hoards of exceptional objects, such as the Trundholm cult wagon, the Agris helmet or the Erstfeld torques ('H1'-type hoards) and hoards containing objects which were precious, but quite usual for the individuals buried in elite graves, such as bronze axeheads, swords or daggers ('H2'-type hoards).

Elite graves

The expression 'elite graves' refers here to the most remarkable tombs, the ones that stand out by their architecture or the composition of the grave goods they contain. Specialists usually propose a two-level classification (discussed further below). The first category, 'G1', covers the outstanding graves, often referred to

as 'princely' burials, usually distinguished by monumental architecture, constructed in remote areas and containing extremely rich grave goods, notably rare types of objects and exceptional items of sacred value² (Fig. 12.1). The second category, 'G2', refers to burials with stereotypical grave goods (weapons for men and, mainly, ornaments for women) which stand out from other burials, even though the difference to other graves in the cemetery is never very strong. For instance, those deceased buried with a sword in the middle Bronze Age, Hallstatt C or middle La Tène represent this category which, once we expand the chronological focus, also includes the battle axe bearers of the Corded Ware culture and Bell Beaker graves with archery equipment and daggers.

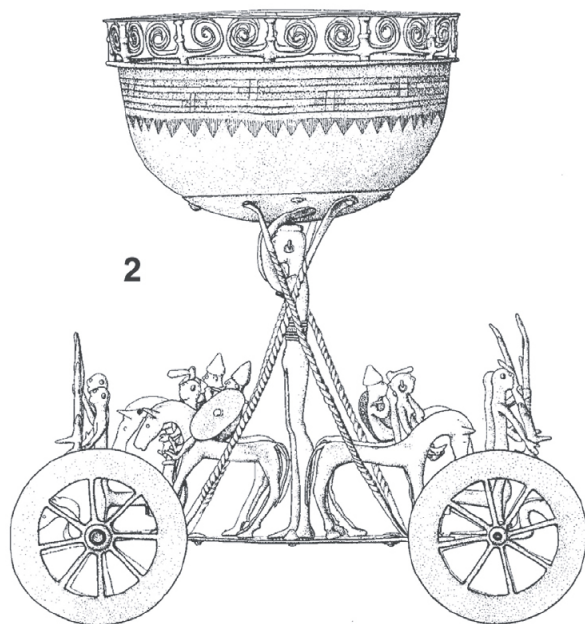
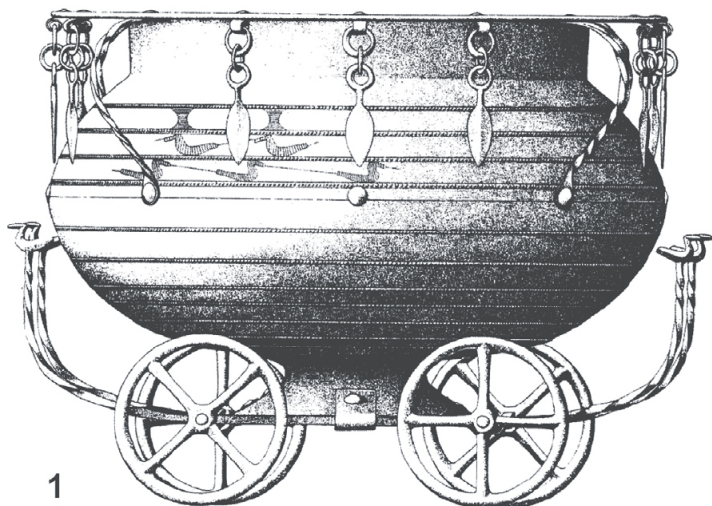


Figure 12.1. Miniature bronze cult wagons from G1 graves. 1: Trudshøj, Skallerup, Denmark, thirteenth to twelfth centuries cal BC (after Kossack 1997); 2: Strettweg, Styria, Austria, seventh century cal BC (after Egg 1996).

Hoard and grave goods

Studies of the relationship between hoards and grave goods have mostly been concerned with H2 hoards and G2 graves, and the weapons, swords in particular, have held people's attention. Specialists have demonstrated a pattern of geographical avoidance and provided evidence of stereotyped cycles for certain regions. Regarding the early phase of the Urnfield culture, Hansen (1994) wrote that '[i]n the areas yielding tombs with warfare-related grave goods, hoards are almost completely absent'. This kind of remark could be made for all hoard-rich periods in the second and first millennia cal BC. The same applies to sequences in a same area, with object types appearing alternately in funerary contexts and in hoards (Hansen 1994; Hänsel and Hänsel 1997). In several areas, periods with G1 graves coincide with a collapse in the number of hoards. This has been observed for the Hallstatt D/early La Tène period in western central Europe and in eastern France, as well as for the Bronze Age in northern Europe (Kristiansen 1998). The existence of a dialectical relationship between grave goods and hoards is now well established, and to better understand this phenomenon only a single example is required here, the famous cycle beginning in the late Bronze Age and lasting to the middle La Tène in western central Europe.

During the late Bronze Age (excluding a few significant graves at the end of the period), swords are found in hoard contexts (H2). In Hallstatt C they disappear from hoards, which themselves become very rare, and reappear in the graves of a new group of 'sword bearers', comparable to those of the middle Bronze Age (G2 graves). During the era of the 'princely' graves (G1) of the Hallstatt D/early La Tène, the graves of the sword bearers disappear, but without the sword becoming a component of the G1 aristocratic graves. In areas with 'princely' graves, the practice of burying hoards has completely vanished, whereas it remains active in the peripheral areas, which are obviously still subject to the rules of the previous phases of the cycle. During early La Tène,

type G1 graves gradually disappear and give way to the return of the ‘sword bearers’ in their G2 graves (the so-called ‘Celtic warriors’). Exceptional goods are no longer found in graves, but are archaeologically attested in the H1-type hoards.³

Two pairings, G1/H1 and G2/H2, are thus clearly taking shape. Their relationships are subject to precise rules, the corresponding objects being sometimes offered to supernatural entities, sometimes integrated into grave assemblages. The G1 graves correspond to the apex of the cycle. To put it simply, the ‘princely’ graves banish both the sword graves (G2) and the hoards (H1/H2), and show an extraordinary concentration of wealth, power and exceptional goods. These items, which can be compared to *sacra* as defined by Maurice Godelier (1996),⁴ have been monopolised by the elites; by appropriating such community symbols, they transcend the traditional divisions based on equal rights among the sword-bearing local chieftains.

These phenomena have naturally generated a great number of highly interesting works that cannot all be mentioned. Here, it is important to emphasise the existence of a mechanism based on a dialectical relationship between hoards and grave goods from elite tombs (G1 and G2) which, even though its precise meaning is difficult to understand, represents the visible face of a system geared towards managing both the relationships of dependence between people and the relationships of the elites with the transcendental. Both pairs, G1/H1 and G2/H2, each associated with a different category of goods (exceptional goods vs. precious goods), play a major role in this system. They can be linked to the existence of two parallel systems of stratification, one rooted in the observable world (local/supra-local chieftains) and one in the supernatural (ancestors and spirits/deities).

Hoard and elite graves: the Chalcolithic

The Chalcolithic or European Copper Age spans the period from

4800 to 2200 cal BC. At first it is only found in eastern Europe in the fifth millennium cal BC but then spreads westwards from the fourth millennium cal BC onwards. Even though there are many works dealing with hoards, an extensive synthesis is still lacking. Through a series of papers published over the last 12 years, Hansen (e.g. 2013a; 2013c; 2014a) has so far carried out the most comprehensive study on this subject. He must be credited with several very useful clarifications on the often tricky issues relating to hoard chronology. Chalcolithic hoards are plentiful and the variability they display is similar to that of Bronze Age hoards, even though some categories, such as hoards of fragmented objects, have not yet been found. The two categories defined for the Bronze Age and the Iron Age (H1 and H2), as well as the two categories of elite graves (G1 and G2), are represented. To name only a few examples, category G2 includes the most remarkable graves in cemeteries from the Lengyel, Tiszapolgár, Bodrogkeresztúr, Brześć-Kujawski⁵ and Lublin-Wolhynie cultures, the Bell Beaker and Corded Ware cultures, and the Italian Chalcolithic ‘warrior’ grave cultures (Remedello, Gaudio and Rinaldone). In all these cultures, the corresponding graves show the highest level of wealth. G1 graves are naturally far less numerous and more scattered both in time and space. They comprise the most remarkable graves from the Varna cemetery (around 4600–4500 cal BC) and from the early phase of the Maikop culture (3900–3500 cal BC), as well as the Montenegro tumuli from Mala Gruda, Velika Gruda (Primas 1996) and Gruda Boljevic (Bakovic 2011; Bakovic and Govedarica 2009). All three groups correspond to small chronological and geographical pockets within the much wider European Chalcolithic, composed of societies whose richest graves never exceed the G2 level. This configuration is reminiscent of the Bronze and Iron Ages.

On the basis of current evidence, all H1 hoards belong to the initial Chalcolithic, in other words the phase spanning the second and third quarters of the fifth millennium. For example, this

includes the gold disc from Moigrad in Transylvania, 31.1cm in diameter and weighing 750–800g (Hansen 2009), and the famous Cucuteni hoards from Carbună (851 artefacts, of which 444 are copper; Anthony 2007) and Ariusd (2223 objects; Lazarovici *et al.* 2009). The best documented H2 hoards are the axe hoards: copper hammer-axes (battle axes?) from the initial Chalcolithic (4800–4200 cal BC), copper ‘cruciform’ or adze-axes (for instance those of Jászladány type) from the last third of the fifth and beginning of the fourth millennium (Tiszapolgár, Bodrogkeresztúr, Ludanice); copper shaft-hole (*Schaftlochäxte*) and flat axes from the second half of the fourth millennium and the first half of the third millennium; stone battle axes of the late (fourth millennium) and final (third millennium) Neolithic.⁶ The first appearance of hoards containing a large quantity of objects of the same functional category dates to the ‘shaft-hole and flat axes’ period; this configuration was to become more widespread during the early Bronze Age. For instance, the Griča (Croatia), Petralona (northern Greece; Hansen 2012) and Vâlcele (Transylvania; Szeverényi 2013) hoards are composed of several dozens of axes.

Even though the lack of synthetic studies and the often approximate dating are serious obstacles, the available data make it possible to postulate the existence of a dialectical relationship between hoards and grave goods, similar to the one described for the Bronze and Iron Ages. Significantly, the H1 hoards mentioned above are located outside the area of the Varna culture, in which the only G1 Chalcolithic graves of the fifth millennium are found (this can be considered an example of geographical avoidance, discussed above). As repeatedly underlined by Hansen (2009, fig. 16; 2011, fig. 12), the copper hammer-axes of the fifth millennium display a similar geographical exclusion: pieces found in graves come from the Black Sea area (around Varna), while those found in hoards are from the Carpathian basin. A similar pattern was highlighted for the shaft-hole axes dating between 3500–2500 cal BC, this time with a ‘grave area’ situated in the Caucasian foothills

and the neighbouring steppes and a ‘hoard area’ extending over a large part of Carpathian and Balkan Europe (Hansen 2014c, fig. 17). In both cases, the copper axes show geographical exclusion patterns very similar to those we know for Bronze Age swords. Their distribution seems to be structured around two power centres with type G1 graves, namely the Varna (4700–4300/4200 cal BC) and Maikop (3800–3000 cal BC) cultures.

However, hoards do exist outside the periods with type G1 graves. They then belong to the H2 type, and their composition at least partly overlaps with that of the contemporary G2 graves. Thus, the types of adze-axes found in hoards of the last quarter of the fifth and the beginning of the fourth millennium are also present among the contemporary grave goods, for instance in some graves from the Jászladány cemetery in Hungary (Kienlin and Pernicka 2009). To the examples of geographical avoidance already mentioned, we can in all likelihood add cycles similar to the so-called ‘sword cycle’, previously described for the Bronze and Iron Ages. An imprecise chronological framework and the lack of regional syntheses prevent us from properly testing these first impressions. And yet, even though the picture is not yet as complete as it is for the following periods, the data available to date are perfectly compatible with the system that governs the relationships between grave goods and hoards during the Bronze and Iron Ages. There are strong reasons to suggest that the configuration identified for both periods (major role played by G1 graves, H1/G1 and H2/G2 pairs, and geographical and chronological avoidance) was established as early as the middle of the fifth millennium and that consequently, as the same causes produce the same effects, this period (and indeed the whole Chalcolithic) had a social and ideological substrate similar to that of the second and first millennia cal BC.

Hoard and elite graves: the Neolithic

The metal hoards of the initial Chalcolithic (4800–4200 cal BC) coexist with another major hoard phenomenon, which in western Europe corresponds to the first great wave of the Alpine jadeites. During the first three or four centuries of this time range, the recent phase of the Danubian axe and adze hoards phenomenon flourishes in central Europe, covering an area between the Meuse and the Vistula rivers, and thus placed between the area with copper hammer-axes to the east and the Alpine axes to the west.⁷ By 4600/4500 cal BC, a ‘Europe of hoards’ extended from Brittany to the Carpathian Mountains, over a territory that roughly corresponds to that of the middle and late Bronze Age hoard cycle. Therefore, despite the contrast so often stressed by researchers, the hoard phenomenon took no account of the boundary between the metalworking societies of the Balkans and Carpathians and the purely Neolithic societies of central and western Europe. Indeed the two west European hoarding phenomena (Alpine axes and Danubian adzes) share the fact that they both emerged in non-metalworking societies.

With the small grave group composed of the so-called Carnac tumuli (Morbihan, France), this copperless Europe has its own remarkable centre of G1 graves. The three giant mounds in the Gulf of Morbihan (commonly referred to as the ‘Carnac mounds’) are the Saint-Michel tumulus, Carnac, the Tumiatic tumulus, Arzon and the Mané er Hroëk tumulus, Kerpenhir (see Cassen *et al.* 2012 for a recent synthesis). All three are found in isolation and their size far exceeds all the other Neolithic mounds nearby: the Saint-Michel tumulus is 217m long by 59m wide, with a preserved height of 10m (to be compared with the Maikop tumulus in Urvan, dated to c. 3700 cal BC, which is 160m in diameter and 28m high); the Tumiatic circular mound is 50m in diameter and 15m in height; and the Mané er Hroëk monument is 100m long by 60m wide. Tumiatic and Carnac were built for one single individual each, and Mané er Hroëk did not yield any bone remains (Pétrequin *et al.* 2013). Three ¹⁴C dates were carried out on

material from the central chamber of the Saint-Michel mound, which dated the grave between 4780 and 4332 cal BC (2 σ ; Cassen *et al.* 2012), roughly the same period as the G1 graves at Varna. Typological comparisons confirm the contemporaneity of the two other tumuli.

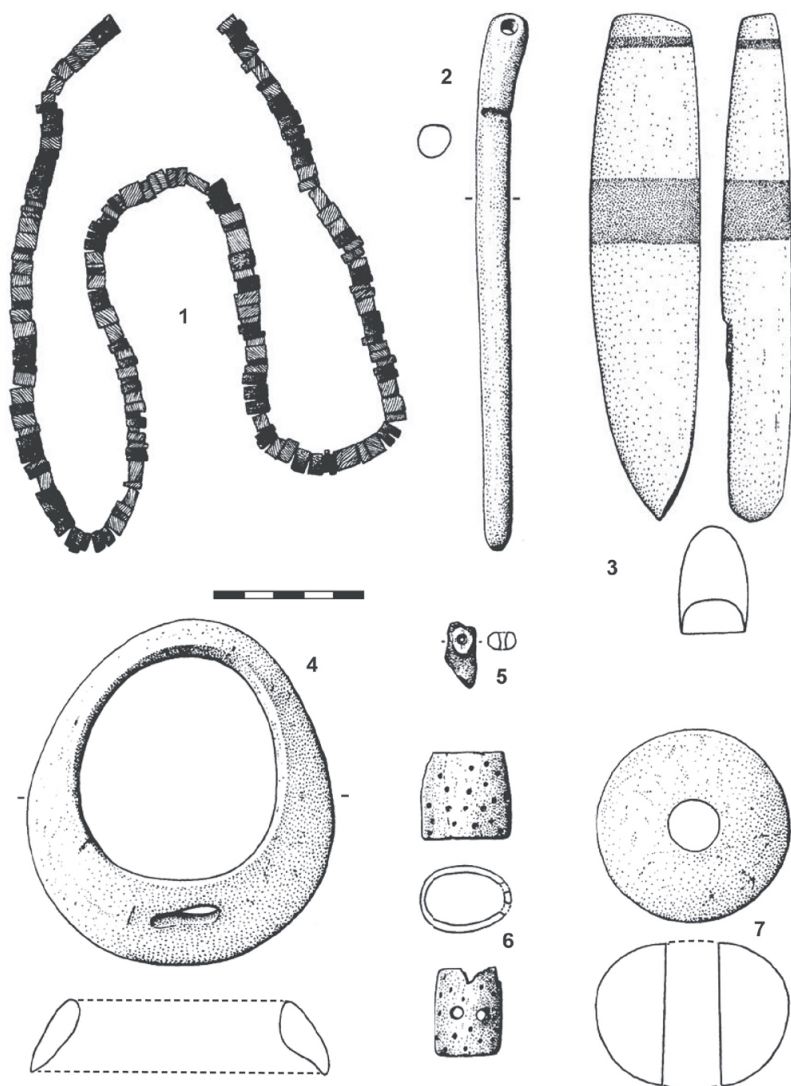


Figure 12.2. The Bajč grave (Slovakia, late LBK, c. 5000 cal BC), which represents the first generation of G2 graves. 1, 3, 7: stone; 4:

shell (*Spondylus*); 2, 5, 6: bone. The assemblage also comprised eight ceramic vessels (after Cheben 2000).

Among the grave goods from the Carnac tumuli were ornaments made from Spanish variscite and large numbers of axeheads, produced both from Alpine rocks, mostly jadeites, and from fibrolite. The geographical origin of fibrolite remains controversial, as the traditionally assumed origin in Brittany has been recently challenged by a possible source in Spain (Cassen *et al.* 2012). The ratios of axes are 15 Alpine/26 fibrolite axes in the Saint-Michel tumulus, 14/15 in Tumiach and 12/101 in Mané er Hroëk. The Alpine axes are astonishingly thin and have been over-polished, testifying to an impressive technical mastery. Isolation, hyper-monumentality, the presence of exceptional goods showing a high level of technical sophistication, the strong presence of exotic material and an over-abundance of objects all leave little doubt that the Carnac tumuli belong to the G1 group. By placing these tumuli in the context of the vast distribution network of Alpine axeheads and the corresponding hoard phenomenon, which they rightly compare with the contemporary copper hammer-axe horizon in the initial east European Chalcolithic, P. Pétrequin and his team (Pétrequin *et al.* 2012b) have convincingly argued the similarity with the Varna G1 graves.

Type G2 graves are very common in the Danubian Neolithic of central Europe (Figs 12.2; 12.3), as well as in the contemporary cultures of northern France. The first central European G2 graves appear during the late/latest phase of the Linearbandkeramik (LBK) culture, in cemeteries where the degree of vertical differentiation is similar to that of the large fifth millennium cemeteries in the Carpathian basin. In the Lengyel, Tiszapolgár and Bodrogheresztúr cultures, the richest burials form a relatively small elite composed of G2 graves which seamlessly fit the late LBK pattern. There is no obvious reason to distinguish, for instance, between the LBK grave at Bajč with its partially ‘warlike’

grave goods (Cheben 2000) and the Lengyel grave 3060 in Alsónyék (Zalai-Gaál *et al.* 2011). West of the Danubian block, in the area involved with the first phase of jadeite axe distribution, the G2 category is represented by the middle Neolithic long barrows. Between the Cerny culture (c. 4800–4300 cal BC) and the related cultures of western France, they cover a vast territory stretching from Burgundy to the Atlantic coast. Whereas in central Europe the male elite status is expressed through polished stone items, including weapons often made from imported material (e.g. from the Jistebsko quarries in Bohemia), this function is fulfilled here by monumentality and by the presence of large sets of arrowheads, Alpine axes being totally absent. The new funerary architecture and the Cerny culture pottery form a link between the post-LBK background of the south-eastern Paris basin, where the earliest European long barrows can be found (c. 4800 BC), and Brittany, where the first long barrows predate, and to some extent prefigure, the giant Carnac tumuli.

As far as hoards are concerned, it is important to distinguish between the Danubian corpus, made up only of H2 assemblages, and the ‘Alpine’ corpus, which also includes H1 hoards. The latter, for instance the Mainz-Gonsenheim hoard, Germany (Hansen 2012), contain exceptional items displaying the same technical sophistication as the axes found in the Carnac tumuli.

The Danubian hoards are most often composed of finished items, but they can also contain roughouts, in particular in areas near the Bohemian quarry sites. Hoards range from one to almost 20 items (17 in Chudonice; Vencl 1975). The most frequent types are the flat adze, the high adze (*hoher Schuhleistenkeil*) and the perforated high adze, whereby from a functional point of view, the latter is actually an axe. Together with the perforated mace, these types are also the most representative components of the G2 male grave good assemblage. The finished objects almost systematically lack use wear traces and consequently were either made especially for deposition, or re-sharpened before being deposited. About 70

such hoards were known by the end of the 1990s (Jeunesse 1998). Recent discoveries bring this number up to more than a hundred, yet it is important to stress that this does not take into account either the river hoards or the great numbers of remarkable isolated finds on display today in many central European museums, a significant number of which are likely to come from hoards. The relevant period falls roughly between the end of the LBK culture and the end of the Rössen horizon (c. 5100–4500 cal BC). The area with the highest density is located between the Rhine and Elbe basins, but this phenomenon is also found further east, up to the Vistula. It covers most of central Europe and a part of northern Europe, up to Denmark, and consequently includes hoards located beyond the northern limit of the Danubian Neolithic (not dealt with in this paper). A rapid analysis suggests that the chronology of hoards varies between regions, yet further systematic studies will be necessary to confirm this picture.

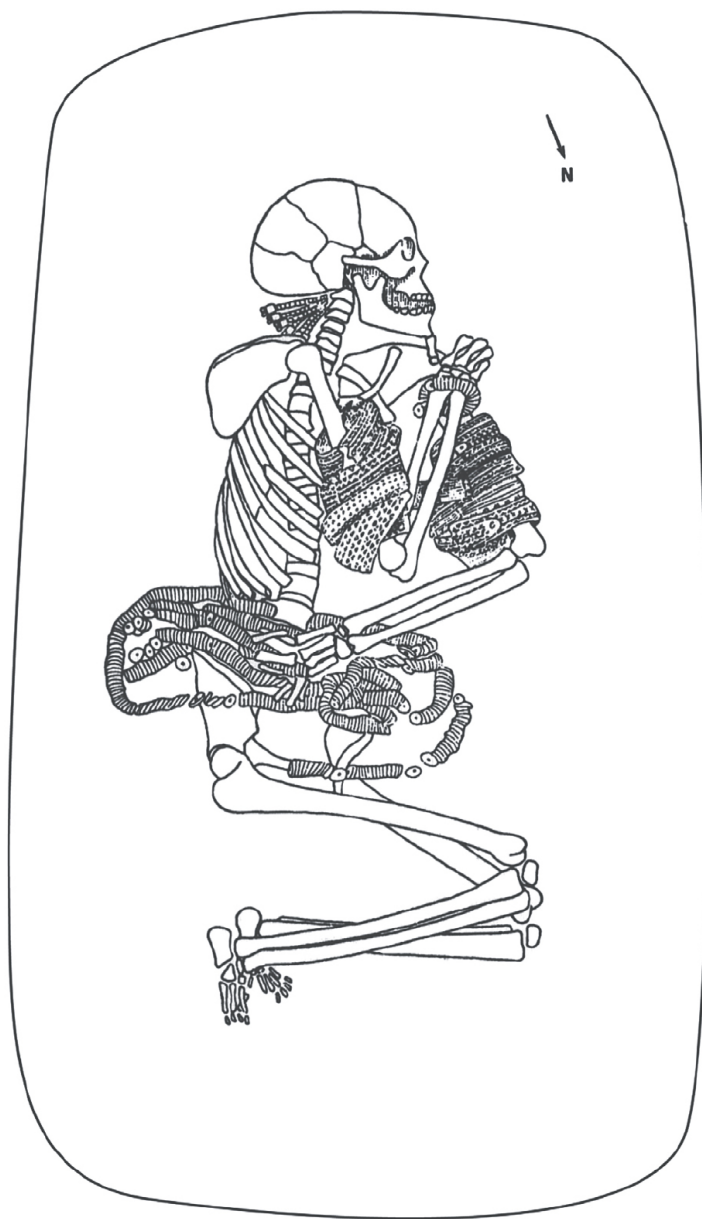


Figure 12.3. Brześć-Kujawski culture G2 grave of a woman from Krusza Zamkowa, Kujawia, Poland, c. 4500–4200 cal BC (after Gimbutas 1991).

With a few exceptions, and setting aside the few hoards attributed to the LBK, the items from hoards are longer than those in contemporary graves in the same regions (Venc1 1975; Jeunesse 1998). The largest pieces are not functional and are certainly exceptional objects with a high symbolic value, some of them being obviously intended to end up in hoards. It has long been recognised that many axes and adzes are made from material belonging to the amphibolite family (named *Aktinolith-Hornblende-Schiefer*/actinolite-hornblende-schist), which presents an aesthetically pleasing veined surface. This importance has been confirmed by recent studies, in particular those on the Bohemian mines of Jistebsko and Velké Hamry II (Czech Republic), which were exploited as early as the end of the sixth millennium (Christensen *et al.* 2006; Prostředník *et al.* 2005; Ramminger and Šida 2012). When compared to G2 grave assemblages, hoards often include a greater number of items, which tend to be larger than those from graves; generally speaking, even if the lack of research urges caution, the artefacts coming from hoards are more likely to be made from exotic stone than those from graves. However, the great number of artefacts in some hoards, the existence of some very large items and the use of a specific widespread stone are not sufficient to reach the level of the type H1 hoards, which implies the presence of objects displaying a manufacturing technique so sophisticated that they are clearly distinguished from everyday/functional items. From this point of view, the level is comparable to that of the copper adze-axe hoards at the transition between the fifth and the fourth millennia in the Carpathian basin, whose relation with funerary assemblages also seems to follow similar rules.

As for the Chalcolithic, imprecise dating frameworks make it very difficult to demonstrate the existence of avoidance phenomena and cycles in the respective distribution areas of both Neolithic hoard corpora. Avoidance phenomena are strongly suggested by changes in geographical foci, visible in the Danubian

hoards, and by a strong contrast between regions with a high number of graves and few hoards (for instance the Rhine valley and western Hungary) and regions with important concentrations of hoards and few graves (for instance Bohemia and Moravia). They are visible both at the end of the early Neolithic and in the first part of the middle Neolithic, most of the Danubian hoards belonging to the latter. The presence of type H1 hoards of Alpine axes as far as Germany, hundreds of kilometres away from the G1 graves in Brittany, reflects a comparable phenomenon. If we take into account all hoards (H1 and H2) of Alpine axes datable to the fifth millennium and the exceptional grave goods from the Carnac tumuli, the resulting configuration is similar to that of the pair formed by the G1 graves in Varna and the mid-fifth millennium hammer-axe hoards; in both cases the epicentre of the phenomenon (the area of the G1-type graves) is located at the periphery, surrounded by a wide ring of hoards. The existence of cycles becomes more obvious when, following the lead of Hansen and Pétrequin, one is not reluctant to take into account long-lasting phenomena taking place over wide territories. In western France, it thus becomes possible, despite a sometimes uncertain chronology, to reconstruct a three-step sequence:

1.

Long barrows of the Cerny type (G2);

2.

Giant Carnac tumuli in southern Brittany (G1), G2 long barrows still being used elsewhere;

3.

After the disappearance of the G1 graves, back to a configuration in which everywhere the graves with the highest status are long barrows (G2).

This G2–G1–G2 series heralds the numerous similar sequences that will dot later European prehistory. The HaC–HaD/early LT–middle LT sequence (see above) is one of the best described. Another

revealing example is the following, central European, sequence:

1.
Beaker cultures and first part of the early Bronze Age (G2),
2.
Princely burials of the Únětice culture (G1),
3.
Graves of the last two centuries of the early Bronze Age
(return to G2).

While their Chalcolithic counterparts are often considered as more ‘advanced’, the Neolithic societies of central and western Europe thus demonstrate similar configurations of hoards and elite graves. Both pairings, H1/H2 and G1/G2, are present, as well as very convincing evidence in favour of the existence of avoidance systems and cycles identical to those which characterise the two later cycles of the Chalcolithic and the Bronze and Iron Ages. There is thus every reason to assume that in the Neolithic, the same dialectical relationship between hoards and grave goods existed in the societies involved with the Danubian and Alpine hoard phenomena as in the later periods. Consequently, it is possible to imagine a shared and single social and ideological matrix for the whole chronological period from the end of the sixth to the end of the first millennium.

Discussion

The example of western Europe shows that this dialectical relationship, as well as G1-type graves, can arise within a non-metalworking context, among ‘small Neolithic village societies’. Its genesis is thus completely independent of metallurgy and of the major technical innovations of the fourth millennium (namely animal traction and wheeled vehicles), which are also often said to have opened the way to significant social and historical changes. The lack of these techniques did not prevent the communities in

the Gulf of Morbihan to lastingly impact the landscape through their impressive architectures. Let us keep in mind that the builders of the Carnac graves are very likely the same people who also solved the technical problems linked to the quarrying, the haulage over at least 10km and the erection of the Er Grah ‘grand menhir’ (21m high and weighing 280 tonnes) in Locmariaquer.

Based on a presentation of the Danubian hoards, I once (Jeunesse 1998) listed a series of arguments demonstrating the weaknesses of the ‘Chalcolithisation’ concept and consequently challenged the assumption, supported for instance by J. Lichardus (1991), that structural differences existed between the Neolithic and the Chalcolithic. My conclusions prefigured those recently presented by Schier (2014) in a more comprehensive study, which however does not take the hoard issue into account. The Eneolithic or Chalcolithic (whatever term is chosen) should definitely not be considered as a ‘historical period’ distinct from the Neolithic, and these two names should only be used as chronological horizons (Schier 2014). I would also add that the traits demonstrating that Neolithic societies do not fundamentally differ from Chalcolithic ones are the same traits which also suggest that both of these societies show parallels to the Bronze and Iron Ages. Once the metal-induced ‘mirage’ is cleared, thanks in particular to Pétrequin and colleagues’ work on jadeites, the parallels between the three chronological blocks immediately become obvious.

This is also the case for the great social figures of this story, the hero or the king on the one hand, the weapon bearer on the other hand, which seem to survive intact over four millennia, from the Carnac graves and to the Hallstatt ‘princely’ mounds. The first category concerns the dead buried in G1 graves, who are seen either as ‘heroes’ (Hansen 2013a; 2014a; 2014b; Metzner-Nebelsick 1997) or as sacred kings or ‘Polynesian’-style chiefs (for the Carnac graves, see Cassen *et al.* 2011; Jeunesse 2014; Pétrequin *et al.* 2006; 2009; 2012b; 2013; for the Iron Age

‘princes’ of central Europe, see Egg 2006; 2009; Kristiansen 1998).⁸ The second category (G2 graves) is that of the local chief bearing a battle axe and/or a mace head (LBK grave at Bajč, Lengyel grave at Alsónyék, the Brześć-Kujawski, Tiszapolgár and Bodrogkeresztúr cultures, the Corded Ware culture), a bow and a dagger (Bell Beaker, Remedello, Gaudio, Rinaldone) or a sword (middle Bronze Age, Hallstatt C, middle La Tène). In a previous work (Jeunesse 2011), I have already stressed that there was no objective reason to maintain the tradition dating the birth of the ‘warrior’ to the final Neolithic (Corded Ware and Bell Beaker cultures), and that the funerary practices of the Corded Ware culture, for instance, could be regarded as either prefiguring the practices of the Bronze Age, or, with equally convincing arguments, as renewing the typical configuration of the Carpathian basin and adjacent southern and central Polish cultures of the second half of the fifth millennium.

The birth of a Barbarian Europe?

After having been established in the late sixth millennium (Bajč and the first Danubian hoards), the system combining the H1/G1 and H2/G2 pairings, the dialectical relationship between grave goods and hoards, the geographical avoidance phenomena and the repeated G2–G1–G2 cycles reached its first climax by the middle of the fifth millennium (with the Varna and Carnac graves). We saw how it was replicated in the following millennia until the middle La Tène period, hence constituting a long-lasting phenomenon spanning more than 50 centuries. One of the characteristics of this system is its tendency to mechanically drift towards producing charismatic, supra-local ‘chiefs’ buried in G1 graves, even though each time, the resulting small ‘dynasties’ rapidly fall prey to a rejection mechanism, itself an integral part of this system which was, for instance, described by Demoule (1999). The existence of long-lasting phenomena that transcend the main

classic chronological divisions has already been suggested by Hansen (2013b), yet only concerning the practice of hoarding in the period from the second part of the Chalcolithic in the fourth millennium to the Iron Age, during which several structurally identical cycles succeed one another.⁹ Yet, he does not push his reasoning further to consider the dialectical relationship of graves and hoards and restricts himself to the Metal Ages.

Similarly, Hansen (2013b) does not discuss a possible later extension into the post-Iron Age protohistoric societies, into European regions that remained outside the Roman Empire, or into regions with early Medieval non-Christianised, pre-state societies. Here the typical alternation between periods with a funerary hierarchy dominated by G2 graves and periods with G1 graves can nevertheless also be observed, alongside a great number of H1 and H2 hoards. Yet, elements of continuity between the Iron Age *stricto sensu* and this complex have already been regularly pointed out. Among the most striking propositions is the comparison made by Steuer (2006) between the Hochdorf G1 Hallstatt grave and the Sutton Hoo Anglo-Saxon ship burial. Based upon this parallel, Steuer (2006, 24) suggests that over a period including at least the Iron Age and the early Middle Ages ‘the social structures of European pre- and proto-history remained roughly the same over millennia, or at least many centuries, and regularly led to the occurrence of sumptuous or “princely” graves’. While Hansen focuses his reflection on hoards and barely mentions their link with elite graves, Steuer is instead focused on the latter.

However, data are plentiful for the millennium spanning the Roman period and the early Middle Ages in central and western Europe, and they enable us to conclude that again, a structural link exists between these two categories of finds. Once again, a few examples will have to suffice. The first episode of G1 graves concerns the Lübsow type of so-called ‘princely’ graves (c. 50 BC–50 AD), which covers all of Germany from southern central Europe to southern Scandinavia (Becker 2009; Gebühr 2009;

Quast 2009; Wells 2011). This is followed by the G1 episode of the fifth century AD, with the famous burial of Childeric, king of the Franks, in Tournai (Quast 2009), the Sutton Hoo ship burial mentioned above (first half of the seventh century AD) and the Avar ‘princely’ graves of the seventh and eighth centuries AD (Bálint 2006). Finally, at the end of this rich period which we have been barely able to touch upon here are the aristocratic burials of the Scandinavian area – for instance the Oseberg ship, c. 820 AD (Wendt 2008) – which belong to the same lineage as the Sutton Hoo ship burial. Each of these G1 grave complexes has a corresponding hoard episode: Augustan monetary hoards; the Lengerich hoard, whose composition bears a strong resemblance to the assemblage in Childeric’s grave (Quast 2009); the Avar ‘treasures’ from the Carpathian basin (Bálint 2006); huge Anglo-Saxon hoards such as the one recently discovered in Staffordshire; and numerous hoards from ‘Viking’ territories, amongst others. Like the earliest episodes in this very long story, the G1 episodes are short and concern restricted areas, forming as many geographical and temporal islands surrounded by areas and periods in which the richest grave goods are found in G2 graves, for instance the spear and sword bearers forming the male elite in many Merovingian cemeteries, who continue the long tradition of Bronze and Iron Age burials of sword or sword/spear bearers.

This assemblage still needs to be systematically studied using the interpretative framework developed by Bronze Age specialists for the parallel study of elite graves and hoards. However, it seems to me that the available data are sufficient to suggest that the conclusions proposed by Steuer (2006) for the aristocratic graves can be broadened to include the hoard–elite grave pairing. Far beyond the partial ‘bridges’ suggested by the above-mentioned authors, a global pattern, supported by common forms of organisation, links the Neolithic to the last pagan kings of medieval Europe at the end of the first millennium AD. For the early Middle Ages, hoards, sumptuous grave goods from the royal

graves and G2 warrior graves are constitutive elements of the classic portrait of Barbarian Europe. Assuming that the socio-political and religious structures, of which these are the physical trace, reproduce the complex previously described for the earlier periods, it becomes possible, albeit with the utmost caution, to use the data available for this Barbarian world to improve our knowledge for the whole of late prehistory, from the early Neolithic to the Iron Age. Tacitus's *Germania* and the data gathered by the major historians of the early Medieval Barbarian societies (for instance the highly suggestive data collected by Modzelewski 2006) can thus prove to be precious sources for the Iron Age as well as for the Bronze Age, Copper Age and Neolithic.

The crucial social role played by funerals, the practice of votive deposits (both being pretexts for the public and ostentatious display of wealth), the social and symbolic value of weaponry, the social manipulation of precious and exceptional goods and the display of gender and status through funerary rites and/or grave goods are among the main characteristics of this system.¹⁰ One can just about make out societies in which the competition among warrior elites is at the heart of the social. Periods of relative balance between independent local lineages are disturbed on a regular basis by episodes during which wealth and power are concentrated in the hands of charismatic supra-local chieftains transcending traditional divisions and, judging by some objects usually intended for hoards and found in their graves, transgressing the norms which usually regulate the relationship between humans and supernatural beings. As Metzner-Nebelsick (1997, 97) has summarised, these are the moments when 'gods and people are made similar to each other in sacrificial and funerary rites'. They coincide with moments of high technical and artistic creativity and with the development of genuine luxury economies. Part of the items produced by the latter ended up in the chambers of G1 graves, and another part in H1 hoards, some of them contemporary with, but peripheral to the G1 graves,

others occurring after the fall of the charismatic chiefly dynasties and the restoration of the traditional low-level hierarchies. In this second case, the return of H1 hoards indicates the end of the periods of excess (*hybris*) linked to the G1 graves.

Hoard and elite graves: the end of Barbarian Europe

The cycles punctuating the history of Barbarian Europe are interrupted or cease definitively with the birth of the city-states of Greece and Italy, and later with the emergence of the early Medieval Christian kingdoms. The last pagan populations in southern Scandinavia and east central Europe are progressively converted and integrated into state systems at the end of the first millennium AD. This movement occurs earlier in western Europe, the transition taking place between Childeric, the last 'Barbarian' king, and his son Clovis, the first 'head of state' of the Frankish kingdom. Type G1 graves, along with elite graves in general and hoards, abruptly disappear within a single generation. The former 'regime' may have persisted in certain behaviours, such as the system of mutual personal obligations (vassalage) specific to medieval feudalism or the contemporary Mafia, the practice of duelling current until the end of the nineteenth century or the still existing tradition of personal vengeance in Albania. Yet from that key moment, these behaviours are in a position of inferiority to the state system, which becomes the new frame of reference. The contradiction between personal loyalties (to the lord or to the clan head) and loyalty to an abstraction, which forms one of the anthropological bases of the state system, become the source of constant conflict. As is shown by Modzelewski (2006) with reference to the practice of vengeance, the law compendia of the first early Medieval kingdoms attempted to balance traditional custom and the new requirements of the rule of law.

The nature of the monarchy is also radically changed, as has

often been described. No longer are the *sacra* buried with the king, but the king is buried in the cathedral. The former system endured through invented genealogies, in which some medieval kings claimed descent from ancient heroes, or through the divine right to rule, but like his subjects the king now had to care for the salvation of his soul and, in the eyes of the Christian god, returns to being an ordinary man at the time of his death. Never would royal attributes, the property of the royal institution and symbols of its continuity, or any kind of sacred objects, be buried with him. The G1-type grave was now judged as representing Barbarian manners, presented as the exact opposite of the new social and moral norms. Royal power remained unstable, as shown by the constant dynastic quarrels and the numerous regicides, yet when the kings died the continuity of the state demanded that another king be put on the throne. This prevented power from being atomised in a return to clan solidarities such as used to follow the fall of the king in the political cycles of the Barbarian world. The switch to new loyalties (to the state and to a god that is no longer the ally of the elite) disturbed the pattern of sacrificial offerings. H1 hoards became meaningless and were replaced by euergetism in late Antique societies and donations to the Church in Medieval society. At the same time, the disappearance of the interceding ancestor, although the saints are a faint echo, put the nail in the coffin of the H2 hoard custom. Since the deceased now had access to an egalitarian hereafter and did not have to maintain and defend his status in the next world, they were no longer compelled to take the attributes of their function and social status into the grave.

Conclusion: the hoard and elite grave system, a Neolithic invention

The hoard and elite grave system is established at the end of the early Neolithic. It functions as an ideological root which then

conditions the functioning of late prehistoric societies up to the end of the first millennium AD. The development of states pushes it to the background of the historical stage, into a kind of 'collective subconscious', where it remains a powerful and devious opponent of the state logic. Its emergence is anything but a consequence of the invention and development of metallurgy, which is not a prerequisite, but a product of this system. Besides, metallurgy is at first only used to fuel the luxury economy generated by the ostentatious behaviours of local chieftains and the kings. Generally speaking, one could say that the existence of a king explains the invention of the lost wax technique in Varna or in the Maikop culture and drives the processes that led to the erection of the Er Grah broken menhir at Locmariaquer, and certainly not the reverse.

In conclusion, it is important to bear in mind that this system only concerns part of the European Neolithic/Chalcolithic block. It remains for a long time in competition with the ideologies governing the Michelsberg-TRB complex and the megalithic societies with collective graves, both reflecting other *Weltanschauungen*. But between the second half of the third millennium and the end of the Iron Age, it then reigns unchallenged in central and western European prehistory. Later on, it coexists with the Roman Empire and the early Medieval states. The societies subject to this system are in almost all cases segmented societies dominated by a stratum of local chieftains with no political powers and spurred, in their public action, by the search for prestige and fame. The 'aristocratic' variant, repeatedly generated in small territories and for short periods of time, is nevertheless also encoded in its DNA, in the same way as the mechanisms of social regulation by which the climax illustrated by the 'G1/H1' episodes is systematically doomed to failure.

The hoard and elite grave system is a phenomenon of the '*longue durée*' *par excellence*. The stability of the social and political structures, which is one of its characteristics, has many

implications, too long to be listed in this paper, for our perception of European history throughout the six millennia concerned. To give just one example, there is no room left for the idea that radically new political and social structures would have been introduced during the fourth and third millennia, the time many specialists consider key for the establishment of Indo-European ideology in central and western Europe.

Neither the fall nor the emergence of the hoard and elite grave system are direct consequences of material changes. Rather, its decline follows a wide and deep anthropological mutation which leads to a complete redefinition of the political organisation and the relationship to the sacred. The new ideological matrix which is now put in place would, amongst others, come to completely upset the relationship between society and precious and exceptional objects, wiping out the configuration in which the dialectical relationship between hoards and grave goods, and the opposition between the H1/H2 and G1/G2 pairings, play such important roles.

Notes

1

For Jeunesse (2014), the eponymous Maikop grave and the Carnac graves are the products of similar social contexts. Kadrow (2015) underlines the many parallels between the latter and the rich graves in Varna.

2

The earliest group belongs to the Únětice culture, with the iconic example of the Leubingen barrow, the Wessex and the Armorican Tumulus cultures. Several centuries later (thirteenth to twelfth centuries BC), the group is composed of three sets of graves located in southern Germany (Hart an der Alz, Poing), south-eastern central Europe (Čaka and Ůckov in Slovakia, Milavče in Bohemia) and southern Scandinavia (among them Kivic in Sweden and Trudshøj in Denmark). The third episode takes place between

the tenth and eighth centuries BC, exclusively in northern Europe (Korshøj and Lusehøj in Denmark, Håga in Sweden, Seddin in north-eastern Germany). There is a fourth and final episode, for which the very expression ‘princely grave’ (*Fürstengrab*) was specifically created, since it refers to the famous group of aristocratic graves from the Hallstatt D/early La Tène horizon in the western Hallstatt area (Hallstatt C and D in the eastern Hallstatt area).

3

With the famous examples of the Abris helmet, the Niort cauldron and the Erstfeld torques; see Schönfelder (2009) for details.

4

Among the precious goods of a traditional society, Godelier isolates the *sacra*, consisting of objects which do not circulate and belong to supernatural forces. They are opposed to the *dona*, which can be used in economic and ceremonial exchanges (Godelier 1996). The miniature ceremonial wagon from the Hallstatt period Strettweg grave in Austria, or the Bronze Age sun chariot from Trundholm (Denmark), are examples of *sacra*.

5

The position of the Brześć-Kujawski culture in the literature is sometimes ambiguous: it is often associated with the metalworking cultures of the Carpathian basin; yet it also shares several features with the central European middle Neolithic (*Mittelneolithikum*) cultures where metallurgy plays a secondary role, with most copper objects considered as imports (Grygiel 2008). The same applies to the Lengyel culture. Hence, both cultures are classed as Neolithic for the purposes of this article.

6

The corpus of battle-axe hoards from the TRB and Corded Ware cultures is mostly composed of hoards found in rivers (Wegner 1976), sometimes in sections where Bronze Age hoards, notably of swords, were later deposited.

7

Even though the distributions of Alpine and Danubian axeheads overlap in the western part of central Europe, between the Meuse and Weser basins (Pétrequin *et al.* 2012c, fig. 8). Yet nothing

prevents the assumption that most of the Alpine axe hoards in this area actually post-date the end of the Danubian hoard phenomenon.

8

For a comprehensive discussion on the social identity of the central European Iron Age ‘princes’, and the various interpretations (from Big Man to sacred king), see Schier (2010).

9

This author also relies on the river hoards of polished stone implements to tentatively suggest the possibility of even longer-lasting phenomena beginning as early as the Neolithic (Hansen 2013b).

10

Contrary to what some readers may think, these traits are far from being universal; admittedly, the system of which they are the archaeologically visible traces became dominant at the end of the Neolithic, but it was to the detriment of other systems (the Michelsberg/TRB and the first and second megalithic complexes), where these traits are completely or largely absent.

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Sudden time? Natural disasters as a stimulus to monument building, from Silbury Hill (Great Britain) to Antequera (Spain)

Richard Bradley and Leonardo García Sanjuán

From Silbury to Sudan

It was difficult to settle on a subject for this paper as Alasdair's research has taken him in so many directions. Having done so, it has been even harder for us to choose an appropriate title. In the end it is borrowed from a piece of music, *Sudden Time* by the English composer George Benjamin (2004, 72–4). The reference to time provides one starting point since the problems of Neolithic chronology play an important part in Alasdair's work. But how can time ever be 'sudden'? It is because his account of causewayed enclosures suggests that some structures were created and used for

remarkably short periods (Whittle *et al.* 2011). It is important to investigate extended processes like monument building in relation to rapid developments of this kind.

The idea that monuments might be built rapidly appears in Alasdair's discussion of Silbury Hill, where he also considers the possibility that they were constructed in response to natural disasters. He discusses the use of mounds in many different cultures, drawing on a range of archaeological and ethnographic sources. One of these earthworks is especially relevant here. It was built by the Nuer in Sudan during the 1890s, and its construction was inspired by a religious specialist called Ngundeng who played an important role during outbreaks of infectious disease. It was built in order 'to bury all bad things associated with smallpox and rinderpest' (Whittle 1997, 148–9). The mound was 20m high and had a diameter of about 30m. The exterior was decorated with ostrich eggs, feathers and elephant tusks. The site became an important cult centre for people who came there to sacrifice their cattle. In some respects it may have played a similar role to monuments in Europe, for, like them, its construction drew on the efforts of a large number of people. What is more important is that it was built over a short period of time and in response to an outbreak of disease.

Can a similar process be identified in Neolithic Europe? Did other mishaps that once appeared inexplicable lead to an increase in ritual activity, and might it be illustrated by the construction of enormous monuments? Here we consider a particular kind of natural disaster: an earthquake. Previous research on the field of paleoseismology has provided evidence of the effects of earthquakes on prehistoric monuments and the societies that built them (Berberian *et al.* 2014; Jusseret 2014; Martínez-Torres 1997). To this end, we will draw on examples from Brittany and southern Spain, connecting them to the specific contexts in which some monuments were built.

From Sudan to Locmariaquer

The Locmariaquer complex (Fig. 13.1) encapsulates several of the main developments in the Neolithic of north-west France (Bailloud *et al.* 2009; Scarre 2011). It also epitomises its problems. How should prehistorians come to terms with the different time scales that influence the interpretation of this period?

There were protracted processes as well as sudden events, and it is necessary to consider their relationship to one another. On one level the monuments associated with Er Grah (Le Roux 2006), Table des Marchands and Le Grand Menhir Brisé (Cassen 2009a) illustrate the problems associated with the early Neolithic period (Fig. 13.1). On another, they shed light on the relationship between two styles of funerary architecture. Both can only be investigated by considering a lengthy sequence, as Alasdair himself did in an article published some years ago (Whittle 2000).

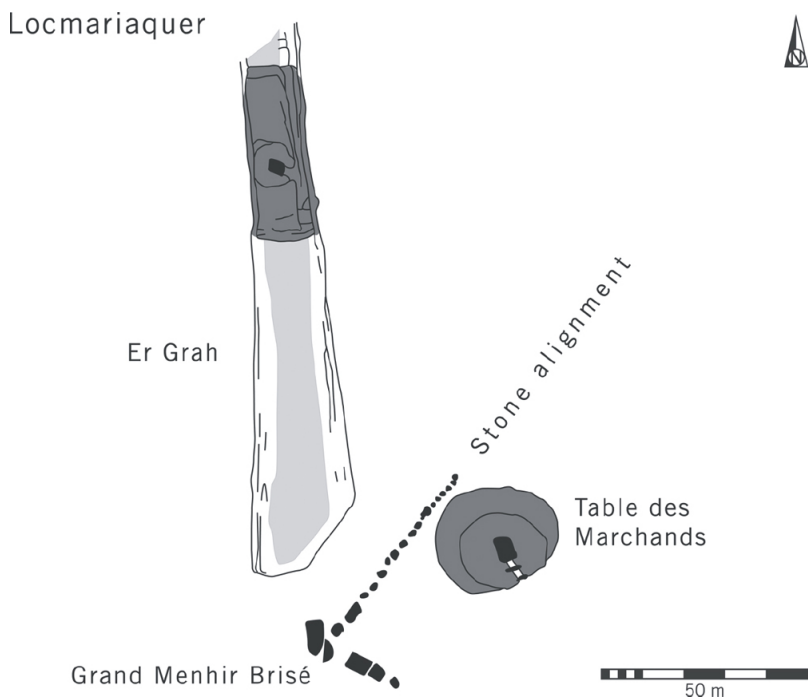


Figure 13.1. The Locmariaquer monument complex. Information from

Brittany occupies a distinctive position in north-west Europe. It is connected to inland areas further to the east, in particular the Paris basin with its important links to the Rhineland. The Morbihan, where so many monuments were built, is situated on the Atlantic coast and is equally accessible by sea from south-west France and Iberia (Scarre 2011, chapter 3). Each of these connections illustrates a distinctive strand in the Neolithic settlement of the Continent and it is possible that they were associated with different populations. The complexity of the local geography is illustrated by the distribution of jadete axes. They seem to have been brought overland from the Alps to the Breton coast, where a few examples were portrayed in megalithic art. According to a recent study, some examples were modified after their arrival in Brittany and were taken to Iberia where their characteristic form was copied by locally made artefacts (Fábregas Valcarce *et al.* 2011).

The two long-distance routes are associated with distinct types of mortuary monument: passage tombs in Atlantic Europe, which are usually associated with circular mounds or cairns; and long mounds in the regions further to the east (Scarre 2011, 46–53). It is impossible to demonstrate that they were built by different groups of people, as there are few samples of human bone to study by scientific methods. On the other hand, the contrasts so clearly evidenced by monumental architecture suggest that in north-west France there must have been at least two ways of commemorating the dead. Although there is some evidence of sequence, it is clear that individual structures were modified in the course of time and that they could also change their forms (Boujot and Cassen 1991; Scarre 2011, chapters 4–6). Thus, circular passage tombs might be encapsulated in later long mounds, and pieces of the standing stones that were sometimes associated with those long barrows might be built into further passage graves. This has been claimed

as evidence of iconoclasm (L'Helgouac'h 1983).

The structures at Locmariaquer illustrate these points. There is uncertainty about their exact sequence, but the massive long mound of Er Grah incorporated a small circular cairn with a chamber. Er Grah was also associated with an alignment of standing stones. Their chronology is debatable (Scarre 2011, 68–79), and it is possible that the largest, Le Grand Menhir Brisé, was erected before the tomb was built. The same should apply to a reused monolith which covered the chamber at Er Grah. In turn, an important passage grave, Table des Marchands, was erected over a decorated menhir. In this case it remained *in situ* and became the rear wall of the chamber. The entrance passage incorporated fragments of other decorated stones (Cassen 2009b).

The interplay between these architectural forms is not restricted to Locmariaquer and is found sufficiently widely to suggest that there might have been conflicts over the correct ways to treat the dead. Of course they may have developed because the inhabitants of north-west France believed they descended from different groups of settlers, but the case is tenuous. On the other hand, the modifications to these monuments are so well documented that they suggest a growing tension between competing views of the world.

There was another, more obvious source of tension for the inhabitants of the area around Locmariaquer. Again it can be recognised on an extended time scale. This was the rise in sea level that led to important sites becoming separated from the mainland and cut off on increasingly small islands (Scarre 2011, 40–1). Still more important, an extensive tract of fertile ground was flooded so that what had once been productive land became the Gulf of *Morbihan* – the name means the ‘inner sea’. The process had begun during the later Mesolithic period, but it continued into later phases when even such well known monuments as the enclosures at Er Lannic were threatened by rising water. Recent fieldwork has identified stone alignments which are beneath the

sea today (Cassen *et al.* 2011).

The process was so rapid that the inhabitants of southern Brittany might have observed the changes that happened from one generation to another. How did they react to the threat? Serge Cassen (2009b) has put forward the interesting argument that the long alignments of menhirs which run roughly parallel to the coast were conceived as a spiritual barrier against the invading waters. That would certainly explain why some of the menhirs which appear early in the local sequence seem to depict sea creatures. Alasdair made the same observation in his article 'Very like a whale' (Whittle 2000).

One of these distinctive images was created on the tallest standing stone in Brittany, Le Grand Menhir Brisé, which forms the end of the alignment associated with the long mound at Locmariaquer (Fig. 13.2). There are various ways of interpreting these pictures. In some cases standing stones feature carvings of animals, axes and bows. Others show creatures associated with the sea, and for that reason it has been tempting to consider the pecked designs as standing for two populations (Whittle 2000). One was the indigenous Mesolithic community with its long-established connections with the coast, the other consisted of the farmers who used stone axes to clear agricultural land. That is entirely possible, but Cassen (2005; 2009b) sees the emphasis on gigantic sperm whales as evidence that it was the sea itself that was all-powerful and posed a threat to the local inhabitants.

So far this account has emphasised processes that extended across the *longue durée*. The chronology of these developments is not precise, but they continued across the generations. They may have created uncertainty and apprehension and could even have resulted in conflict, but the archaeological record provides little evidence of the rapid changes that feature in Alasdair's work. Yet there are developments that were much more abrupt. The clearest evidence (and the most controversial) was the breaking of decorated menhirs which were sometimes associated with long

mounds. Fragments of these distinctive sculptures were incorporated in a new generation of passage graves, yet this process seems to have been determined more by the size of these pieces than the particular designs they carried.

Among the places where this change happened was Locmariaquer. It applied to the entire alignment of standing stones associated with Er Grah, but special problems are associated with Le Grand Menhir Brisé, the largest monolith of its kind anywhere in Europe. Did it fall whilst it was being erected, or was it broken afterwards? Much depends on the mechanism by which the sculptures were destroyed. One possibility is that this particular example was toppled by tectonic activity. A new study of other fragments in the Morbihan goes further (Gaumé 2013). The fractured surfaces show no indications of human damage, and there have been suggestions that the stones forming entire alignments were levelled simultaneously. Sometimes all of them fell in the same direction. The only plausible mechanism is an earthquake. There is scientific evidence that this region of France is prone to dramatic earth tremors. It may have been tectonics rather than ideology that precipitated a change.

That suggests that the broken fragments can be interpreted in a new way. They were not the result of iconoclasm but of natural forces that could not be explained. Unlike the rise of sea level, this was a sudden catastrophic event which may have undermined the confidence of the local inhabitants. Far from resisting the encroachment of the waters or emphasising a contested system of belief, the standing stones simply lost their power. In Alfred Gell's terms, they were artworks whose agency had gone (Gell 1998). Maybe that is why they assumed a new role in a different style of architecture – the monumental passage grave rather than the long mound. Unfortunately, that can only be a hypothesis, for it implies that those structures were built simultaneously; it will be difficult to show this, although one of the broken menhirs was divided between two separate tombs (Le Roux 1985). The traces of an

older ideology were sometimes concealed from view along with the remains of the dead. The past was remembered, but it was also rejected as the tradition of passage tombs covered by round mounds became firmly established. The same applies to the beliefs associated with these distinctive monuments.

Like the Nuer prophet's mound, a series of stone monuments in Brittany could have been erected in response to a natural disaster. On one level it might have been an attempt to propitiate destructive forces in the world. On another, it might have resulted from a sudden failure of confidence in the established order, exacerbated by existing tensions of the kinds considered earlier. The beliefs of the local inhabitants had literally fallen apart, and for people who had no understanding of earth science it was impossible to explain why it had happened. The two interpretations are by no means mutually exclusive. Perhaps too much depends on analogy with what happened in Sudan during the late nineteenth century. It would be more useful to identify archaeological examples of the same process in other parts of Europe. Fortunately, a strikingly similar development seems to have occurred during the Neolithic period in the south of Spain. Again it concerns a famous example of megalithic architecture.

Grand Menhir Brisé

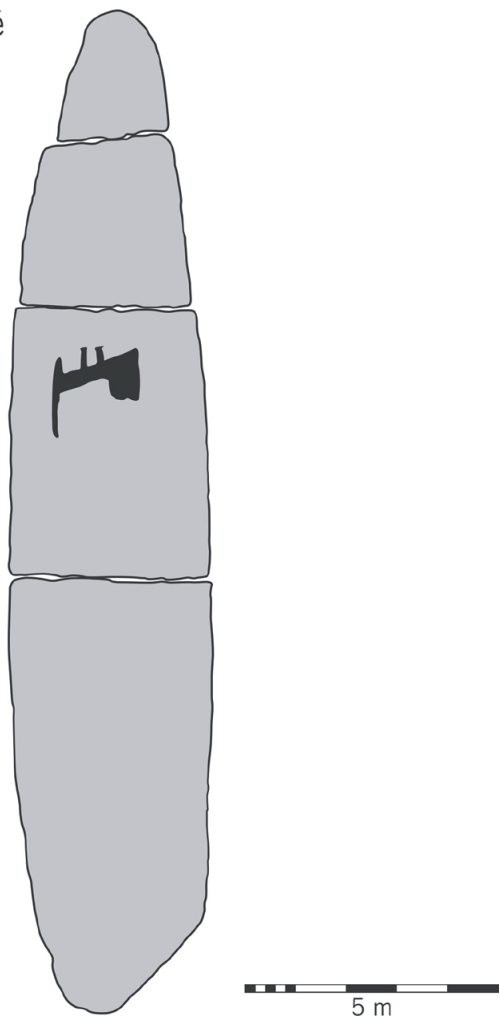


Figure 13.2. Le Grand Menhir Brisé. Drawing: Aaron Watson.

From Locmariaquer to Antequera

Menga (Antequera, Málaga, Spain) is perhaps the largest megalithic monument of the Iberian Peninsula – and undoubtedly one of the most majestic. Recent investigations have begun to reveal that, in accordance with its extraordinary formal and architectural characteristics, Menga has a long and complex

biography, throughout which it was probably never forgotten or neglected, as was the case with countless other Iberian Neolithic monuments. There are reasons to think that Menga was known, used and frequented uninterruptedly until the time when archaeologists first became interested in studying it in the 1840s (García Sanjuán and Lozano Rodríguez 2016).

It has been estimated that the stones that were used to build it weigh c. 950 tonnes, the heaviest of them being the chamber's final capstone, weighing some 150 tonnes (Carrión Méndez *et al.* 2010) (Fig. 13.3). If its magnitude astonishes today's visitors, who are used to seeing extraordinary works of modern engineering, one can easily imagine how going into Menga would have been an incredibly overwhelming experience for a Neolithic person. But Menga's unique nature is not restricted to its stones. There are various other elements of its architectural design that are very special, not to mention intriguing, since they pose interesting questions concerning its origins as a monument and the intentions and motives of those who built it. On the one hand there is the well discovered in 2005, which is circular in plan, almost 20m deep and reaches the water table. The date of its construction is, in essence, unknown. Menga's first excavator, Rafael Mitjana y Ardison, published a brief *Memoir* in which he accounted for his discoveries and ideas concerning the monument (Mitjana y Ardison 1847), but he made no mention of finding or excavating the well. However, barely three years after Mitjana y Ardison's booklet was published, Lady Luisa Tenison, a British traveller, visited Menga, providing reliable evidence that a part of the well had been emptied when she saw it (Tenison 1853). During the excavation carried out in 2005 (Fig. 13.4), material culture corresponding to the seventeenth and eighteenth centuries AD was found within the shaft's infill, along with mallets and hammers from an indeterminable period, but compatible with those that would have been used to carve Menga's stones in the Neolithic period (García Sanjuán and Lozano Rodríguez 2016). The 'modern'

chronology of the shaft's infill is corroborated by the radiocarbon dates obtained from animal bone (García Sanjuán *et al.* 2016). That said, the filling is one thing, but its construction is another matter altogether. Could Menga's well, despite its modern infill, have been built as part of its architectural construction programme in the Neolithic? It is a question that, for now, has no definitive answer, though it is possible to put such a hypothesis forward, as we will see later on.

The second surprising factor regarding Menga's design is its orientation, which goes completely against the norm that is so prevalent in the majority of megaliths in southern Iberia. As Michael Hoskin (2011) showed in his excellent archaeoastronomical study, the vast majority of southern Iberian megaliths face sunrise. Menga's orientation (45°) is situated slightly north of the summer solstice (55°) and points towards La Peña de los Enamorados, a natural formation located some 7km to the east (Hoskin 2009, 182). La Peña de los Enamorados is an interesting archaeological site in its own right, since significant remains from the Copper and Bronze Ages have been found on its southern slopes (Moreno Aragüez and Ramos Muñoz 1983; Rodríguez Vinceiro *et al.* 1992; Suárez Padilla *et al.* 1995), whilst there is an interesting Roman site (which includes a necropolis and possibly a temple) in the plain adjacent to its south-western sector (Cisneros Franco and Corrales Aguilar 1994) and there is evidence of Medieval occupation in its northern sector. Furthermore, La Peña de los Enamorados has an especially evident characteristic: its noticeable anthropomorphism, which resembles the face of a human being emerging from the depths of the earth and looking towards the sky (Fig. 13.5). This shape, possibly coupled with the fact that its prehistoric and ancient occupation was already known, ensured the mountain featured prominently in local folklore at least since the late Middle Ages (García Sanjuán and Lozano Rodríguez 2016).



Figure 13.3. Interior general view of Menga (Antequera, Málaga, Spain). Photo: Miguel Ángel Blanco de la Rubia.

Work carried out in the last few years has shown that, in fact, Menga's 'unorthodox' orientation points towards the northern section of La Peña de los Enamorados (or its 'chin'), which when viewed from the north is a massive 100m high rocky cliff of intense reddish colour. At the base of this cliff appears a large triangular shelter in which evidence of schematic rock art has been found. A mere 100m opposite the shelter, on top of the sleeping giant's 'neck', a significant area of activity dating from the late Neolithic period (and possibly the Copper Age) has been identified. As well as large amounts of lithic material, this site, called Piedras Blancas I, includes various large stones laid flat which, it is suspected, may once have been upright (García Sanjuán and Wheatley 2009; 2010; García Sanjuán *et al.* 2011; 2015). If current on-going research reliably shows that those were 'menhir-like' stones, they would provide a plausible explanation for why Menga is orientated towards such a place and not the sun, as would have been usual for the Neolithic period: in its design, Menga would have incorporated a tribute to a pre-existing

ancestral place, just as mosques pay tribute to Mecca as the ancestral home of Islam through their orientation.

That said, what is the relationship between Menga's extraordinary characteristics (the water well and its orientation), La Peña de los Enamorados and the topic of this work: natural disasters as a stimulus for the construction of monuments? To answer this question it is necessary to go back in time to the early Neolithic period, when the Antequera region was first occupied by farming communities. In accordance with current data, the Neolithic way of life began in the south of Spain between 5500 and 5300 BC. Not far from Antequera, on the Málaga coast, is the cave of Nerja, one of the earliest Neolithic settlements in southern Spain (Aura Tortosa *et al.* 2013). Around this time, a small group of people, probably originating from the coast, established a settlement in the El Toro cave (Antequera). El Toro is located in El Torcal, an extraordinary karstic landscape in which nature has carved abundant and astonishing 'natural monuments' – in fact it is currently a natural park which attracts thousands of visitors every year. Therefore, the region's first Neolithic populations chose to settle in a location where they were permanently surrounded by extraordinary 'natural monuments' (Fig. 13.6).

In accordance with the available radiocarbon dates, El Toro was occupied continuously from approximately 5400 BC until an indeterminate point in time between 4000 and 3800 BC when it was abandoned, most probably as a consequence of an earthquake which destroyed the entrance to the cave, caused part of its roof to collapse and opened a chasm around 30m in depth in its main chamber (Egüez *et al.* 2014; Martín Socas *et al.* 2004). From that point on, traces of human activity in the cave during the Copper and Bronze Ages were reduced to sporadic visits and its use as a livestock enclosure, a matter demonstrated by the presence of remains of nocturnal birds which would never have colonised the cave had it still been constantly occupied by humans. Although the traces of the earthquake which put an end to El Toro's

occupation are unquestionable, and it seems impossible that the cave would have been inhabitable after it, unfortunately it has not been possible to establish its exact date so far. Recent research on paleoseismicity in southern Iberia has uncovered evidence of a large number of seismic events in the late Holocene, showing that the Ventas de Zafarraya Fault, running barely 50km east of Antequera, is the area of highest seismic hazard in Spain (Grützner *et al.* 2013, 53), including also some major tsunamis (Lario *et al.* 2010).

By coincidence, just a few years ago studies were carried out on the abundant earthquake traces present in El Aguadero (Periana, Málaga), another cave barely 40km east of Antequera (Clavero Toledo 2010). Of particular interest here is radiocarbon date Beta-222473, which dated a particularly devastating earthquake (called ‘Axarquía E-2-3’) in 4850 ± 70 cal BC (4040–3720 cal BC at 2σ). When this date is included in the same diagram as the 29 dates from El Toro cave and the earliest dates available from Menga (Fig. 13.7), something very interesting emerges: the date of earthquake ‘Axarquía E-2-3’ is not only placed right in the period when the aggregate series of El Toro radiocarbon dates was interrupted rather abruptly (probably showing when the cave ceased to be occupied), but it is placed just before the dates that show the earliest confirmed use of Menga.

What is the relationship between these three series of dates from different but inter connected places in the Antequera region? Could it be suggested that there is a connection between the ‘Axarquía E-2-3’ earthquake, the El Toro cave devastation and the construction of Menga? Undoubtedly, El Aguadero’s date marking the time of the earthquake ‘Axarquía E-2-3’ is not sufficient to be sure of the timeline of this powerful seismic event. Additionally, other recent research looking at major earthquakes in the area through a different set of indicators (Grützner *et al.* 2013, 58) does not match the El Aguadero results. Furthermore, there are no

absolute dates that ‘prove’ exactly when Menga was built: the three existing radiocarbon dates have been obtained from pits excavated in its atrium (two of them) and at the base of the tumulus (the third one) ([Table 13.1](#)). But none of them shows the exact date Menga was constructed with any certainty. The first tests by OSL dating carried out recently in an attempt to date the sockets in Menga’s central pillars have failed (Athanasas *et al.* 2016), and although there is a project in place to carry out new dating attempts using this method, the record of the interior of the megalith’s chamber has been modified so much by the constant archaeological work carried out since the nineteenth century AD that there is no guarantee this research is going to be successful.



Figure 13.4. Excavation in progress at Menga's well in 2005. Photo: Juan Moreno.



Figure 13.5. La Peña de los Enamorados (Antequera, Málaga, Spain) at dusk from the east. Photo: Miguel Ángel Blanco de la Rubia.



Figure 13.6. Camorro de las Siete Mesas in El Torcal's karstic landscape (Antequera, Málaga, Spain). Photo: Javier Pérez González.

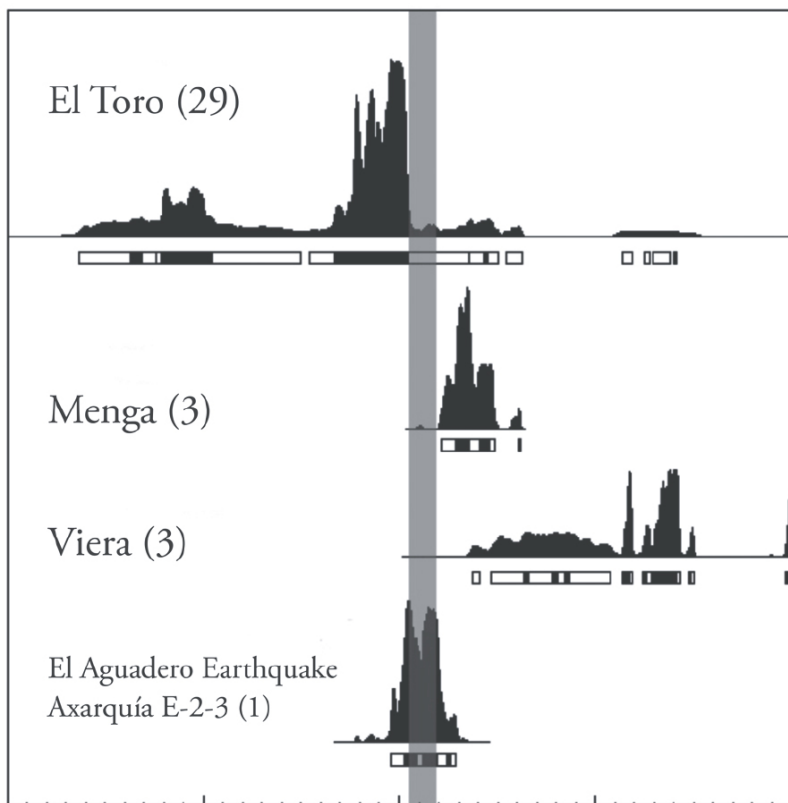


Figure 13.7. Diagram showing the aggregated radiocarbon dates for El Toro, Menga and Viera, together with El Aguadero ‘Axarquía E-2-3’ earthquake.

However, despite all the current problems and the precautions that must be taken, there are indirect traces that encourage the investigation of the possible relationship between the earthquake that caused El Toro cave to be abandoned (possibly the earthquake ‘Axarquía E-2-3’) and the construction of Menga. In fact, Menga’s orientation could be giving us a crucial clue as to its origin. If it is accepted, hypothetically, that the site of Piedras Blancas I on the slope opposite the northern cliff of La Peña de los Enamorados (possibly monumentalised with standing stones) was an important gathering place used for some time by the local Neolithic

communities before Menga was built, then it would be possible to establish whether the earthquake that destroyed El Toro cave also damaged the site of Piedras Blancas I. If that was the case, then it is very likely that the earthquake and its consequences caused a cultural shock with immense social and psychological repercussions for the local communities. This would explain Menga's unorthodox orientation, not aligned towards the sun, but the ancestral space that would have been inexplicably destroyed by a catastrophic phenomenon.

Table 13.1. Selection of radiocarbon dates for Menga and Viera (Antequera, Málaga, Spain).

<i>Megalith</i>	<i>Context</i>	<i>Lab</i>	<i>Sample</i>	<i>Date BP</i>	<i>2σ cal BC/AD</i>	<i>Reference</i>
Menga	Pit (atrium)	Ua-24582	Charred material	4935±40	3790–3690 BC	García Sanjuán and Lozano Rodríguez 2016
Menga	Pit (atrium)	Ua-24583	Charred material	4865±40	3760–3530 BC	García Sanjuán and Lozano Rodríguez 2016
Menga	Mound base	Ua-36216	Charred material	4760±30	3639–3384 BC	García Sanjuán and Lozano Rodríguez 2016
Viera	Mound base	GrN-16067	Charred material	4550±140	3631–2916 BC	Ferrer Palma 1997
Viera	Chamber	Beta-353820	Animal bone	4090±30	2860–2500 BC	Aranda Jiménez <i>et al.</i> 2013
Viera	Chamber	Beta-353822	Animal bone	3580±30	2020–1880 BC	Aranda Jiménez <i>et al.</i> 2013
Viera	Vicinity	Beta-412999	Human bone	1790±30	133–330 AD	Aranda Jiménez <i>et al.</i> 2015
Menga	Mound	Beta-413001	Human bone	1770±30	138–345 AD	Aranda Jiménez <i>et al.</i> 2015
Viera	Vicinity	Beta-413000	Human bone	1730±30	243–386 AD	Aranda Jiménez <i>et al.</i> 2015
Menga	Mound	Beta-413002	Human bone	1700±30	253–406 AD	Aranda Jiménez <i>et al.</i> 2015
Viera	Vicinity	Beta-413004	Animal bone	1540±30	426–588 AD	Aranda Jiménez <i>et al.</i> 2015
Viera	Vicinity	Beta-413003	Animal bone	1500±30	432–639 AD	Aranda Jiménez <i>et al.</i> 2015
Viera	Vicinity	Beta-413006	Animal bone	1520±30	428–609 AD	Aranda Jiménez <i>et al.</i> 2015
Viera	Vicinity	Beta-413005	Animal bone	1490±30	436–644 AD	Aranda Jiménez <i>et al.</i> 2015
Menga	Burial (atrium)	CNA-1174	Human bone	1250±35	676–871 AD	Díaz-Zorita Bonilla and García Sanjuán 2012
Menga	Burial (atrium)	CNA-1173	Human bone	1100±45	783–1022 AD	Díaz-Zorita Bonilla and García Sanjuán 2012
Menga	Shaft	Beta-322311	Animal bone	120±30	1679–1940 AD	Riquelme Cantal 2012
Menga	Shaft	Beta-322312	Animal bone	150±30	1667–1951 AD	Riquelme Cantal 2012

And what can be said of the Menga well? Once again, although no firm data exist on the date when it was opened, Iberia's Neolithic societies were undeniably capable of digging wells of this design and depth, as the shafts and galleries identified in the extraordinary flint mines in Casa Montero (Madrid) (Consuegra Rodríguez *et al.* 2004; Díaz del Río and Consuegra Rodríguez 2011) and the variscite mines in Can Tintorer (Gavá, Barcelona) (Blasco *et al.* 2000) testify. Additionally, the Menga well has an extremely careful and symmetrical finish all the way from its mouth to its base, which does not correspond in any way

to what is normal in southern Spain's ancient, medieval or modern water wells, in which such careful finishing is not deemed necessary. Menga's shaft was sculpted with as much care as the orthostats and capstones that cover it, which is probably an indication that it had a special aesthetic and symbolic meaning beyond a merely practical purpose; in fact it has been suggested that some of the stones on the site were originally 'stelae' (Bueno Ramirez *et al.* 2015). Therefore, although it is impossible at present to prove the well was opened in the Neolithic period, a little before or after Menga was built (or during its construction), we cannot rule it out either. In this respect, it is very interesting to note that Menga is situated on a small natural elevation that overlooks La Villa stream, a watercourse that runs from El Torcal down to the Antequera plain, flowing into the Guadalhorce river which comes in from the east from La Peña de los Enamorados. If the Menga well were as Neolithic as its stones, at the precise location chosen to construct it the extraordinary megalith would have made a connection between the water that ran down from El Torcal and water that came from La Peña de los Enamorados. At the same time the monument created a visual and symbolic link between that place and the northern section of La Peña de los Enamorados – the 'anthropomorphic' mountain.

In short, in the light of the data currently available it is worth asking rationally if the ancestral shelter (Matacabras) and the activity area (Piedras Blancas I) at the foot of the great natural monument (perhaps a 'sacred mountain') of the region's Neolithic populations could have been destroyed by a force of nature outside their comprehension. A phenomenon of this scale and importance, happening in a matter of seconds, could have stimulated a monument of Menga's colossal dimensions to be built as a cultural, ideological and symbolic response to the change in the natural order of things caused by the earthquake. A great challenge would have required a great response from the local societies.

Undoubtedly, all that has been said constitutes a hypothesis and not a confirmed theory. The joint research currently being carried out by the universities of Alcalá de Henares, Granada, Seville and Southampton is looking for empirical evidence to confirm or deny this possible explanation of Menga's remarkable nature. Did Menga originate as a formidable and brilliant response from the Neolithic population to a great natural challenge? If this hypothesis were to be one day proved correct, it would connect Menga's profound past with its more recent history: on 15 January 1885 King Alfonso XII of Spain visited Menga as part of the tour he made of the region as a result of the great earthquake that struck on 25 December 1884 at 9:08pm, devastating the region and claiming more than 800 lives (Sánchez-Cuenca López 2011, 49–50); there are references to other large earthquakes in the region's modern history, on 1 November 1755 and 9 October 1680 (García Maldonado 2003). The 1884 earthquake caused a 15–17km long surface rupture to open at the Ventas de Zafarraya Fault with a maximum vertical displacement of around 1.5m, opening fissures and cracks and causing landslides, flooding and changes in spring water chemistry over a wide region (Grützner *et al.* 2013, 52). Due to the powerful impression the great megalith made on him, the king ordered Menga to be declared a National Monument by Royal Order. When this occurred on 1 June 1886, perhaps nature itself had completed, through an earthquake, a beautiful circle between the past and the present; was this what Menga's builders did when they erected their magnificent monument?

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exercise for all...

Art in the making: Neolithic societies in Britain, Ireland and Iberia

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Art is not what you see, but what you make others see
Edgar Degas

Art is often marginalised in discussions of the Neolithic. Images of figurines, rock art and passage tomb art typically grace the front cover of books on agricultural societies but are often poorly integrated in the content of these books. Our contention is that art is in fact a significant component of Neolithic life, and should be discussed alongside the panoply of other elements that make up the usual debates relating to the Neolithic, be it agriculture, sedentism, human–animal relations, monumentality or material

culture.

The study of Neolithic art and imagery is partial and fragmentary. Partial because certain phenomena are accorded excessive significance over other less studied regions and chronological periods. Examples of partiality would include the emphasis on the passage tomb art of Ireland or Brittany and the figurine traditions of the Balkans. By contrast, the study of open-air rock art would be a good example of a phenomenon that has seen less attention in British and Irish scholarship (see e.g. Bradley 1997; O'Connor 2006), and only a little more in Spanish and Portuguese (Acosta 1968; Baptista 1983; Bradley 2002; Fairén-Jiménez 2015) compared to the passage tomb art phenomenon. Fragmentary because connections are not made between what are viewed as isolated phenomena. It is only relatively recently that the connections between open-air rock art and passage tomb art in Ireland were discussed and established (O'Connor 2006; Shee Twohig 2012). While connections between passage tomb art, rock art and the decorated artefacts of the Neolithic of these regions have been discussed, until now they have not received systematic study and analysis.

While Neolithic art has not been one of Alasdair's central concerns, he has made contributions to debates in this area, most notably in relation to the representational imagery of the decorated menhirs of Brittany (Whittle 2000). Meanwhile it is well-known that Alasdair has made immense contributions to the comparative analyses of Neolithic societies across Europe (e.g. Bailey *et al.* 2005; 2008; Bickle and Whittle 2013; Whittle 1977; 1996; 2003; Whittle and Bickle 2014; Whittle and Cummings 2007). Here we continue some of the debates begun by Alasdair by comparing the role of art, imagery and decoration in two different regions of Europe: Britain and Ireland, and the Iberian peninsula. Our aim in doing this is to move beyond the partial and fragmentary approaches of previous accounts, to instead examine art and imagery as a holistic phenomenon and to compare and

assess its role for Neolithic societies in each region.

Although Alasdair's primary publications have not focused on art, he did encourage a young undergraduate (one of the authors: AC), to pursue research into passage tomb art. Alasdair remained AC's supervisor throughout his Masters and PhD; AC would not have studied this material were it not for Alasdair's support and wisdom. His colleague Doug Bailey once joked, 'how did an Alasdair student end up doing art?!' When AC asked Alasdair why, if he loved the subject so much, he was not studying it himself, Alasdair replied that he always wanted to, but there was not enough time in the world. AC aims to continue the study of art and archaeology, in Alasdair's honour, and as an on-going vote of thanks.

Passage tombs and rock art in Britain and Ireland

The making of marks in stone is a characteristic of both open-air rock surfaces and upstanding monuments within the Neolithic of Britain and Ireland. In many ways it is similar to the rock art of Iberia (see below). What highlights this art as different to other areas of Europe is an emphasis on non-representational geometric carvings. Studies of open-air rock art in Britain have tended to focus on landscape location to provide a context for interpretation (e.g. Bradley 1997). Studies of passage tomb imagery have focused on structural symbolic analyses (e.g. Bradley 1998; Thomas 1990; Tilley 1991) and 'hermeneutic' interpretations (e.g. Thomas 1992; 1993), or have compared motifs with images generated during altered states of consciousness (e.g. Dronfield 1995; 1996; Lewis-Williams and Dowson 1993). A common denominator over the last 150 years has been a perspective that see the images as texts to be read. Following Box (1979, 202), Cochrane and Jones (2012) have demonstrated how these interpretations are *importantly* one-dimensional and misguided. Alternative models have been

developed which blend image position within rock art panels, passage tombs and the environment (e.g. Cochrane 2012a; 2013; Cochrane *et al.* 2015; Jones in press; O’Sullivan 2013; Shee Twohig 1996; 2012; Thomas 2001). Such movements are interested in the relationships between things during particular moments in time.

Images without an end – passage tombs

Passage tombs are arguably the most famous monument type in Ireland, with the Boyne Valley complex, Co. Meath, often attracting the most attention (Fig. 14.1). Although our current understandings of passage tomb chronologies in Ireland are limited, it is estimated that they originated within the third quarter of the fourth millennium cal BC and continued to be constructed until the early third millennium (cf. Bayliss and O’Sullivan 2013; Cooney *et al.* 2011; O’Sullivan 2005). Passage tombs consist of a large sub-circular cairn revetted by a continuous kerb of large stones; this kerb is a distinctive feature of many examples. Cairn sizes vary but are normally between 10 and 80m in diameter. The cairn covers a megalithic structure consisting of a chamber with an aperture leading to the exterior, often via the eponymous passage (Coffey 1912, 102; Collins 1960; Collins and Waterman 1952, 28; cf. Dronfield 1994, 75; Herity 1974, 22; Shee Twohig 1981, 204). Imagery on passage tombs is non-representational and consists of geometric motifs, occurring on the kerbstones and the interior structural stones. The tombs in the Boyne Valley, Co. Meath, form the richest area of megalithic motifs in western Europe (Eogan 1986; O’Sullivan 1993; Shee Twohig 1981). Images can be on the front and backs of stones, meaning that some images would not have been seen once the stone was positioned in the monument. An interesting feature of passage tombs in Ireland is the general priority of ‘dexter over sinister’ (Herity 1974, 123), reflected in the size of the right hand

recesses, the motifs, materials and human remains.



Figure 14.1. Fourknocks I, Co. Meath (image: courtesy of Ken Williams).

Such a wealth of imagery suggests that, contrary to Herity's arguments (1974, 107), the motifs were not a 'by-product' or surplus extra. Rather their importance was integral to the motivations that helped create the monuments and subsequent encounters with them (Cochrane 2006, 254). In fact, Robin's (2009; 2010; 2012) recent work demonstrates that passage tomb art and passage tomb construction are closely interwoven. Art is carved at significant junctures as the passage tomb is being constructed (Fig. 14.2).

Jones (2001, 335; see also O'Sullivan 1986; Shee Twohig 1996) has argued that many studies dislocate panels and motifs from their original contexts and present them in isolation, in two-dimensional form, predominantly in black and white line drawing on paper – a practice that privileges the static form of the motifs over more fluid processes (see Jones 2004). Such conventions create a situation where the spectator, in studying motifs in a corpus (e.g. O'Kelly 1973; Shee Twohig 1981), is under the

illusion that the image is a 'realistic' representation of the original design (Jones 2001) and is also given an observer-imposed selection of acceptable images (O'Sullivan 1986, 71). The presentation of motifs in this format also can facilitate the selective representation of panels to reinforce a point (Shee Twohig 2000, 91). When modern spectators engage with passage tomb motifs, many see them as complete compositions. These images did not always appear as one exhaustive display; there were episodes and sequences, be it by substitution or replacement of existing motifs by imposed motifs (Cochrane 2006; Eogan 1997; Jones 2004). O'Sullivan (1986; 1996) detailed the sequences from a standard geometric style, through to an extreme pick-dressing style as a final and mature phase (O'Kelly 1971; Shee Twohig 2000). Although carved into stone, passage tomb images are by no means static or permanent. Part of their significance (if any) probably derives as much from the acts of making as from reception. From such a position, we can regard the images less as *signs* and more as *marks* (Jones and Díaz-Guardamino in press). Mark making is a process and performance; thinking through such modes allows us consider the implications of re-enactment and replication (see discussions in Cochrane 2006, 266; Dawson and Minkin 2014).



Figure 14.2. Orthostat L19, Newgrange Site 1, Co. Meath (image: courtesy of Ken Williams).

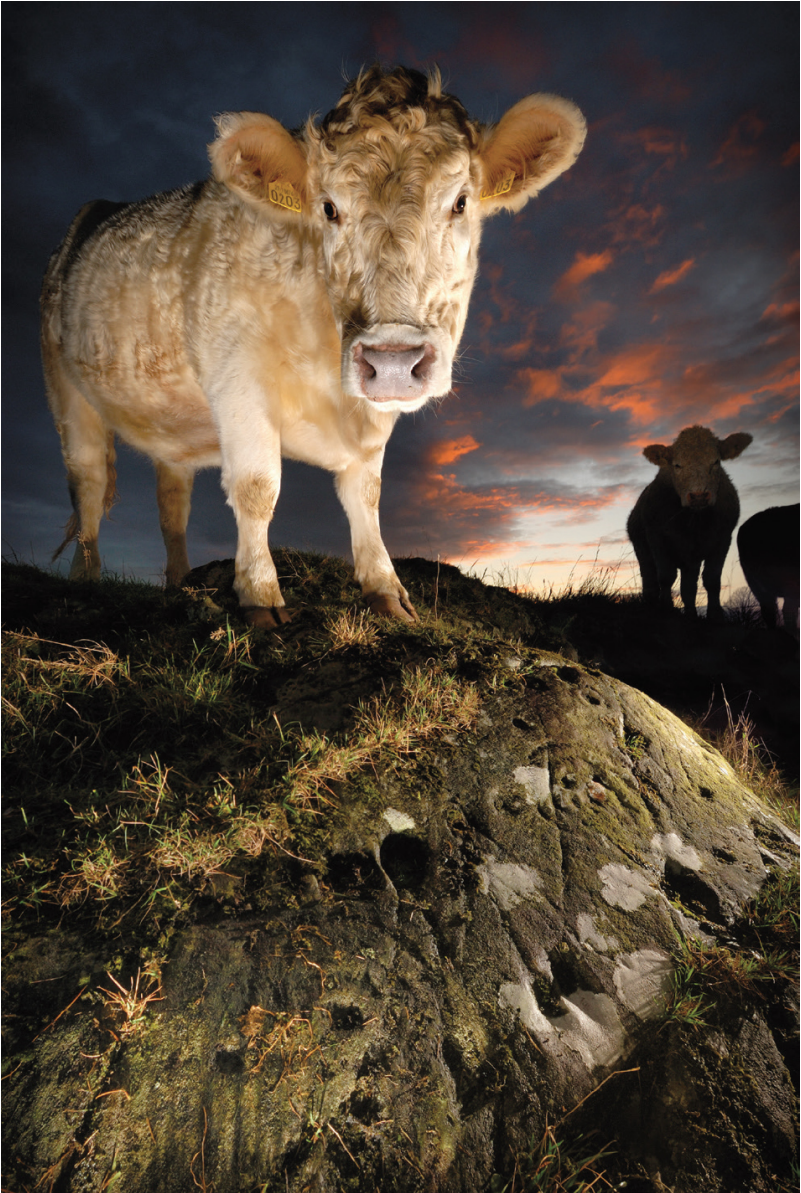


Figure 14.3. Rock art at Drumsinnot, Co. Louth, Ireland (image: courtesy of Ken Williams).

Such images are not performed in isolation; the motifs and the architecture of the tomb are often collaborating together. Robin

(2010, 389) describes the impact of threshold-motifs, occurring at significant junctions or liminal crossings (see also Cochrane 2006, 169; Sharples 1984, 116–7). Such relationships are powerful and can enhance a feeling of movement within the tomb (Cochrane 2012b; Lewis-Williams and Dowson 1993; Thomas 1990; 1992). It can also be humbling and overwhelming – visual saturation. Decorated stones can stimulate senses of isolation with incorporation (Lewis-Williams and Dowson 1993, 60; Robin 2012, 390). Here, images are not passively awaiting thoughtful humans, to *overlay* and then decode messages. Indeed, architecture working with motifs can actively create fragmentation and the *delay* of communication.

Recent work has indicated that there were rhythms and temporalities within the construction of many of the tombs. For instance, the excavation of the large mound at Knowth Site 1 detailed two successive phases of tomb building, termed Tombs 1B and 1C (Cleary and Eogan in press). Construction commenced with a stone cairn that covered the west and east chambers and their passages (Tomb 1B). This was enhanced by extensions to both passages and enlargements to the mound (Cleary and Eogan in press). As with the images, mounds are not passive indexes, and they were not merely protective covers for the tombs (Robin 2010, 373–4). The tomb architecture, kerbs, ditches, enclosures, images, the things within and varied layers of mound material were part of working networks of performances. Although the mounds can often appear less than symmetrical, they are not asymmetrical. There are generally no overarching divisions of the predominance of right over left (Herity 1974, 123), as is seen in the layout of the passage tombs (Robin 2010, 400). The mounds can be composed of varied deposits, including yellow clay, shingle, sandy soils, cairn material, gravel, shale, stone enclosures/features and turf layers (Cleary and Eogan in press; Hartnett 1957; 1971; Robin 2010). It appears that the construction of the mounds was not random; some elements may have been incorporated for their

abilities to stem water percolation (O’Kelly 1982, 22; Robin 2010, 383), others for their smell, texture and visual impact (e.g. the yellow clay). Why would people invest so much time and effort into developing a sequence within a mound that cannot be seen? One answer might be that it was the performance of creating the mound that was important. It was the acts of making and interacting with different things that brought forth particular significances, beyond what could or could not be seen when it was ‘finished’. These engagements may have included stiffness from exertion, hot sweat on a cold morning, the stone that cut the finger and emotional satisfaction. Such performances involved things coming together, collaborating and building a common world. The late twentieth-century artist Marcel Duchamp termed similar acts ‘canned chance’ (Duchamp 1973, 33). Results may vary.

Passage tomb complexes have distinct personalities; idiosyncrasies derive from the particular ways that they are assembled. Such character traits sometimes cross-pollinate and relate to each other. For instance, we can track the similarities or relationships in structural form and motifs with Loughcrew, Fourknocks, Mound of the Hostages, Knowth and Lismullin, Co. Meath (Cochrane 2012b; 2013; O’Sullivan 2013). Broader relationships can be inferred for even further afield and across seas, such as in Pierowall, Orkney and Barclodiad y Gawres, Anglesey (Burrow 2006; Sharples 1984).

Analogue real with a little distortion – rock art

One of the major characteristics of open-air rock art in Britain and Ireland is the emphasis on abstract images, including simple cup marks, cups with one or more rings, cup marks with radiating lines (or cup and ring marks with lines), spirals and shapes often termed ‘rosettes’. Such images can appear to be relatively simple, although they can be assembled into patterns of striking

complexity (Cochrane and Jones 2012) (Fig. 14.3).

The major concentrations of open-air rock art are in the north of Ireland and in Britain from Derbyshire to Perthshire, with particular focus in the north Yorkshire Moors, Northumberland, Argyll and Galloway. In Ireland, we find accumulations in south-west Ireland in Co. Kerry, with smaller groups of rock art in Co. Donegal, Co. Louth and Co. Monaghan (Beckensall 1999; Bradley 1997, 70; O'Connor 2006; Purcell 2002). Bradley's (1997) analysis of the environmental positioning of rock art panels in Britain and Ireland suggests an important relationship between rock art, route-ways and viewpoints; in some regions rock art appears to be highlighting significant routes, or defining the edges of monument complexes.

The rock art of Britain and Ireland is extensive, but it has yet to be fully understood (Sharpe 2012). In recent years, this situation is being redressed, and patterns and connections are beginning to emerge (e.g. Bradley and Watson 2012; Fairén-Jiménez 2007; Jones 2012a; Sharpe 2012; Shee Twohig 2012). Datasets suggest that regional groups present preferences with motifs, the surfaces and textures that are enhanced, and in the environmental settings selected (Sharpe 2012, 47).

Recent fieldwork has begun to address some of these concerns, with several excavation projects devoted to rock art. These have included projects in Northumberland, Kilmartin and Strath Tay. While the excavations at Hunterheugh crag, Northumberland, established a sequence for rock art, with Neolithic cup and ring motifs overlaid by Bronze Age cairns (Waddington *et al.* 2005), excavations at Torbhlaren, Kilmartin, Argyll, produced plentiful evidence for hammerstones of quartz which could be linked to rock art production activities. These were deposited in demonstrable middle and late Neolithic contexts (Jones *et al.* 2011). Similar activities were recognised at several sites on Ben Lawers, Strath Tay, Scotland (Bradley *et al.* 2012). One of the fundamental points that these recent projects have established is

the Neolithic date of rock art. Having established this, we are now in a better position to compare rock art and passage tomb art with other phenomena, such as the decorated artefacts of Neolithic Britain and Ireland. We will look at these now.

Looking at the overlooked: decorated artefacts in Britain and Ireland

One eye sees, the other feels

Paul Klee

Artefacts like the Folkton drums (Jones 2012b; Longworth 1999), or the Links of Noltland figure (Goring 2011), have a focused gaze. These artefacts hint at the representation of the human face and remind us of the African sculptures presented by Chris Marker and Alain Resnais in their film *Les statues meurent aussi* (1953). Brown (2013, 276) suggests that the sculptures in the film are mute and require modern montage to affect. We disagree, and rather than seeing interaction with such objects as appropriation, we suggest that working *with* the things builds relationships. In fact, we argue that working and interaction with the materials from which decorated materials are carved is key to understanding them (Jones *et al.* 2015).



Figure 14.4. Partially erased eyebrow motif on the face of Folkton

drum 2 (Folkton, North Yorkshire, Britain). Left: line drawing highlighting the outline of the motif. Right: highlighted in white rectangle, the motif viewed under Reflectance Transformation Imaging specular enhancement mode (image: Marta Díaz-Guardamino).

Understanding the working processes associated with the decorated artefacts of Neolithic Britain and Ireland is the subject of an on-going research project by two of the authors (AMJ and MD-G). The *Making a Mark* project has two major aims, both with the intention of looking again at the overlooked. The first is to reassess the contextual and chronological status of decorated Neolithic artefacts. We have always imagined a close stylistic relationship between Grooved Ware, passage tomb art and certain special artefacts, such as the Folkton drums (Bradley 1984; Crawford 1957; Longworth 1999; Thomas 1990, 93–8) (Fig. 14.4), but are these connections warranted? Might superficial stylistic similarity belie greater chronological complexity?

Second, the project aims to apply digital recording methods (in particular Reflectance Transformation Imaging, or RTI) and low-powered digital microscopy to understand the processes of making. It is argued that understanding sequences of working will help us understand connections between communities of practice. The decorated artefacts of Neolithic Britain and Ireland are distributed widely, with notable concentrations including the carved stone balls and other decorated artefacts (such as the Westray figurine and decorated Skail knives) of Orkney and north-east Scotland and the variety of carved and decorated artefacts – such as carved phalli and mushroom-headed pins – from passage tomb contexts in eastern Ireland and the decorated slate plaques of the Isle of Man. The project examines artefacts in each of these regions in addition to the chalk plaques and other decorated chalk artefacts of southern England. In each region the aim is to assess similarities and differences in how materials are worked. The project examines decorated artefacts from the earliest

Neolithic contexts, such as flint mines, to middle–later Neolithic contexts, such as passage tombs, henges and Orcadian and Manx settlements, with the aim of understanding changing practices over time.

The project is still in its infancy, but we take one well-studied example to illustrate the approach: the Folkton drums, Yorkshire. The Folkton drums are some of the most complex decorated artefacts from Neolithic Britain. Excavated by Rev. William Greenwell in the mid-nineteenth century (Greenwell 1890), the three drums are in fact carved and decorated cylinders of chalk. The drums were deposited alongside a child burial beneath a barrow in Folkton (Kinnes and Longworth 1985). The drums were recorded using RTI and produced some remarkable results (Jones *et. al.* 2015). New motifs were revealed: several geometric scratch marks on the base of drum 1, with parallels in Yorkshire rock art, Orcadian passage grave art and Manx art. There was also plentiful evidence for erased motifs. Most striking was an erased ‘eyebrow’ motif on the face of drum 2. Erasure was also evidently a technique used during decoration, as ostensibly ‘blank’ spaces on the side panels of drum 1 exhibited evidence of having been cross-hatched with incisions that were then erased. These results are significant, as processes of erasure, addition and superimposition are also a feature of Irish passage tomb art (Cochrane 2009; Eogan 1997; Jones 2004; O’Sullivan 1996). Preliminary analysis of a variety of chalk artefacts, including a selection from the Windmill Hill causewayed enclosure, Wiltshire (Smith 1965; Whittle *et. al.* 1999), the colossal decorated chalk block from Monkton Up Wimborne shaft, Dorset (Green 2000), and the antler macehead from Garboldisham, Norfolk (Edwardson 1965), suggest that processes of erasure and reworking may be more widespread, both geographically and chronologically. The precise details of this are at the present provisional, and it is likely more complexity and detail will emerge as the project continues. From the earliest stages we have been struck however by iconographic similarities

with artefacts from Iberia, and set out to examine these similarities and possible evidence for parallel practices of reworking.

Standing stones, megalithic tombs and rock art in Atlantic Iberia

Atlantic Iberia saw an unparalleled proliferation of stone marking and stone shaping during the Neolithic and Chalcolithic (c. 5800–2200 cal BC). Carefully sculpted and decorated menhirs, megalithic tombs with engraved and painted orthostats and the so-called Atlantic and Schematic rock art traditions all populated the landscapes of varying – at times overlapping – regions from different moments of the Neolithic, some of them throughout all its sequence and beyond.

The works of Portuguese antiquarian Sebastião Estácio da Veiga in the late nineteenth century (2005 [1886–1891]) inaugurated a long research tradition devoted to the study of Neolithic art in Iberia. The literature dedicated to Iberian Neolithic art is immense, and variable in scope and perspective. General overviews include those on decorated menhirs in south Portugal (D. Calado 2000; M. Calado 2002; 2004; Gomes 1994; 1997; Velinho 2005), Iberian megalithic tomb art (Bueno Ramírez and Balbín Behrmann 1992; 2006; Shee Twohig 1981), the earliest Atlantic rock art (Santos Estévez 2007; Villoch Vázquez 1995), and Schematic rock art (Acosta 1968; Alves 2002; Breuil 1933–1935; Baptista 1983; Collado Giraldo 2000; Gomes 1983; Gomez-Barrera 1992; 1993; Jorge 1986; Martínez García 2006; Santos 2009; for a recent overview on Iberian Neolithic rock art traditions see Fairén-Jiménez 2015). Since the 1990s, there has been a feverish publication activity, mainly in the form of papers devoted to specific sites or topics, creating a highly fragmented corpus of research (Bueno Ramírez *et al.* 2007; 2010; 2015; Martínez García and Hernández Pérez 2006; García Arranz *et al.* 2012).

There has been a pervasive emphasis on the representational

dimensions of these visual expressions, which are frequently regarded as static and finished compositions. Recent research has concentrated on recording and documentation, the formal and comparative analysis of iconographies to infer chronologies and explore symbolic meanings (e.g. identity) (García Arranz *et al.* 2012), the formal analysis of spatial/landscape settings and their relationship to specific socioeconomic practices and symbolic systems (Bueno Ramírez *et al.* 2004; 2008; Santos Estévez 2007; Villoch Vázquez 1995). Some researchers have deployed analytical techniques to narrow down the chronology of their production or assess the materials and substances involved in their making (Carrera Ramírez and Fábregas Valcarce 2008; Cruz 1995; Gomes *et al.* 2015; Ruiz *et al.* 2012).

The research developed in Iberia is vast but, in this process, the art itself has been usually set aside as an epiphenomenon of social life, a surrogate for ‘higher order’ symbolic frameworks, while the acts of art-making have been largely ignored. As has been argued, art is fluid and performative (Cochrane and Jones 2012, 2–6), and it is precisely through performance that materials play an active role in or mediate social life (Jones 2012b, 9–14). Rather than focusing on these expressions as inert and finished compositions, Iberian research would benefit from focusing attention on their making, the sequences and processes involved in their constitution in order to disclose a whole new understanding of Iberian art as a fluid and lively phenomenon that is integral to social life. In the following we will discuss some novel undertakings and case studies that show the potential of such an approach.

Making and remaking menhirs: standing stones in Atlantic Iberia

In the south of Portugal, in the west Algarve, there are dense concentrations of menhirs whose manufacture and erection seem

to be linked to the so-called Neolithic transition (Carvalho 2011, 244–5; Carvalho and Cardoso 2003, 41–2; Gomes 1997). More than 400 menhirs are documented. They were frequently shaped into phallic forms and around half of them show surface decoration (i.e. serpentiforms and enchainned ellipses) in low relief and engraved (Fig. 14.5). They are commonly found within ‘activity areas’ defined by scatters of small flint and quartzite tools and debris of their manufacture, hammers, picks, polished stone implements, some early Neolithic decorated pottery, fireplaces and, on occasion, small stone pavements associated with these. These sites also produce faunal remains – mainly molluscs and few ovicaprines – as well as grinding stones, many of them fragmented, whereas palaeobotanical evidence for cultivation is still unknown. On these sites, menhirs, fireplaces and the associated materials are spatially scattered (e.g. 30 menhirs over 25ha in Caramujeira) and, apart from small pavements associated with hearths, no clear-cut evidence for stable dwelling structures (e.g. postholes, storage pits) has been documented so far. Molluscs recovered from a hearth located within an occupation layer (C2) covering two menhir erection pits at the site of Padrão provided two radiocarbon dates pointing to the earliest stages of the Neolithic (5500–5400 cal BC) (Fig. 14.6 and Table 14.1: Carvalho 2011, table 11.1; Gomes 1997, 176).



Figure 14.5. Detail of a decorated menhir, found grouped with seven other menhirs near the village of Figueira (Budens, Vila do Bispo, Portugal) and now exhibited in the Museum of Lagos (image: Ricardo Soares/Museu de Lagos).

Traditionally, these sites have been interpreted as settlements and their associated menhirs as symbols of fertility (Gomes 1997; Gomes *et al.* 1978) or as ethnic and boundary markers (Calado and Nocete 2010). The interpretation of these sites in functional terms has restricted our ability to understand the social significance of this menhir tradition. These menhirs were made of a limestone that is native to the region but frequently enough is not readily available in the sites where they were erected (e.g. Gomes *et al.* 1978, 48). The search, selection, quarrying and movement of these stones to their ‘primary’ resting places was a complex – and

necessarily collective – task in which stones and groups of people worked in tandem. Menhirs could have been roughed out where they were quarried, although there is evidence to suggest that the bulk of their making, or at least their finishing, took place at the sites where they are found today.



Figure 14.6. Menhir 1 of Padrão (Vila do Bispo, Portugal) (image: Marta Díaz-Guardamino).

These ‘activity areas’ offer evidence of a broad range of

activities indicative of menhir-making and suggest their relative importance compared with other activities documented at these sites. Small stone tools, hammers and picks are numerous. These artefacts were probably used, among other activities, to shape and decorate menhirs, and the manufacture and retouch of stone tools, which are so well represented at these sites (Calado 2000, 68–77, 80; Gomes *et al.* 1978), could be considered as evidence for stone working activities such as menhir-making. In the absence of storage pits and remains of cultivated plants, the presence of grinding stones is intriguing. In at least two of the few well-documented contexts, grinding stones are found as part of ‘votive’ caches, one deposited in the erection pit of one menhir, the second next to another and covered by an accumulation of stones (Gomes 1997, 185). Whereas the first cache evidences the significance of practices involved in menhir erection, the second exposes the relevance of menhirs as *foci* of practices of deposition after they were erected. Interestingly, some of the very few domestic faunal remains documented at these sites are associated with a menhir, a fireplace and a stone pavement in Padrão, where molluscs were numerous (Fig. 14.6) (Gomes 1997, 176). Far from being mere consumption waste, these faunal remains seem to be associated with the on-going decoration of menhirs and the deposition of offerings, since next to another menhir of the same site similar faunal remains are found in association with a limestone plaque with traces of red pigment. Indeed, one menhir at the site of Caramujeria, with residues of such pigments on its surface, reveals that these menhirs were also painted (Gomes 1997, 163).

The wealth of performances involved in the making of these menhirs, as well as the range of activities that took place in their immediate surroundings, suggest these sites remained significant for some time. Such is their role in the constitution of persistent places, as it is evidenced at the site of Caramujeira, where there is an intensive phase of activity during the late Neolithic, when some of its menhirs seem to have been recarved (Gomes 1994, 330;

1997, 174–8; Gomes *et al.* 1978).

Menhirs, either isolated or as part of enclosures, are also known in other regions of Atlantic Iberia (Calado 2006; Díaz-Guardamino 2010, 79–94, fig. 23; Gomes 1994). They frequently show phallic or anthropomorphic shapes and surface decoration (i.e. lozenges, serpentiforms, scutiforms, suns, etc.) (Díaz-Guardamino 2010, 79–94). Enclosures belonging to a well-defined tradition located in the Alentejo (south Portugal) include menhirs depicting human bodies dressed with objects such as lunulae and staffs (Calado 2002; 2004). The available evidence suggests their erection and perhaps their decoration could be attributed to the early Neolithic (c. second half of the sixth millennium BC). This dating seems to be supported by the radiocarbon dating of a charcoal sample retrieved from the erection pit of the Meada standing stone – a 7m tall phallic menhir located in the middle Tagus valley (Castelo de Vide, Portalegre) – which also points to the early Neolithic (c. 5000–4800 cal BC) (Table 14.1) (Oliveira 2000, 147), although a possible ‘old wood’ effect cannot be ruled out.

The manufacture of most of the remaining menhirs known in these and other regions of Atlantic Iberia is usually attributed to the middle or late Neolithic (Calado 2006; Gomes 1994). These chronological attributions have a limited validity, since they are based on the comparative study of the menhirs’ surface decoration. Nonetheless, detailed iconographic analyses carried out on many of these menhirs have exposed frequent episodes of carving and recarving on many of them, sometimes possibly extending through two or three millennia (Gomes 1994; 2007), revealing the dynamic and open-ended nature of these large stones (see below).

Table 14.1. Radiocarbon dates mentioned in the text. () Marine reservoir effect correction factor 380 ± 30 . Calibration curve IntCal13.*

<i>Site/Monument</i>	<i>Lab. Ref.</i>	<i>BP</i>	<i>2σ (cal BC)</i>	<i>Sample and context</i>	<i>Reference</i>
Padrão	ICEN-645	6800±50 (6440±60)*	5509–5309	Mollusc (<i>Cerastoderma edule</i>). Hearth.	Gomes 1997, 176; Carvalho 2011, table 11.1
Padrão	ICEN-873	6920±60 (6570±70)*	5632–5379	Mollusc (<i>Ruditapes decussatus</i>). Hearth.	Gomes 1997, 176; Carvalho 2011, table 11.1
Menhir de Meada	UIC-4452	6022±40	5017–4801	Charcoal at base of menhir, within the erection pit.	Oliveira 1995, 147
Monte dos Marxos-Old	CAMS-77924	5330±80	4332–3991	Black pigment (charcoal)	Carrera Ramirez and Fábregas Valcarce 2008, table 6
Monte dos Marxos-Recent	CAMS-77925	4960±60	3942–3642	Black pigment (charcoal)	Carrera Ramirez and Fábregas Valcarce 2008, table 6
Coto dos Mouros-Old	CAMS-83631	5540±70	4523–4259	Black pigment (charcoal)	Carrera Ramirez and Fábregas Valcarce 2008, table 6
Coto dos Mouros-Recent	CAMS-83116	3830±60	2470–2064	Black pigment (charcoal)	Carrera Ramirez and Fábregas Valcarce 2008, table 6
Antelas	OxA-5496	5330±60	4327–4000	Charcoal from layer in corridor covered by slab. <i>Terminus post quem</i> for construction of monument.	Cruz 1995, table 4
Antelas	OxA-5497	5295±60	4316–3982	Charcoal from layer in corridor covered by slab. <i>Terminus post quem</i> for construction of monument.	Cruz 1995, table 4
Antelas	OxA-5498	5070±65	3981–3708	Charcoal from layer in corridor covered by slab. <i>Terminus post quem</i> for construction of monument.	Cruz 1995, table 4
Antelas	OxA-5433	4655±60	3635–3139	Black pigment	Cruz 1995, table 4
Dombate-Moment 1	CSIC-890	4930±70	3943–3538	Charcoal. Top of palaeo-floor	Alonso Mathias and Bello Diéguez 1995; Bello Diéguez 1992/93; 1994
Dombate-Moment 1	CSIC-891	4910±60	3926–3535	Charcoal. Top of palaeo-floor	Alonso Mathias and Bello Diéguez 1995; Bello Diéguez 1992/93; 1994
Dombate-Moment 2	CSIC-942	4480±25	3339–3035	Charcoal. Preparation and use of access area (idols).	Alonso Mathias and Bello Diéguez 1995; Bello Diéguez 1992/93; 1994
Dombate-Moment 2	CSIC-964	4470±30	3339–3026	Charcoal. Preparation and use of access area (idols).	Alonso Mathias and Bello Diéguez 1995; Bello Diéguez 1992/93; 1994
Dombate-Moment 2	CSIC-940	4450±25	3331–3017	Charcoal. Preparation and use of access area (idols).	Alonso Mathias and Bello Diéguez 1995; Bello Diéguez 1992/93; 1994
Dombate-Moment 2	CSIC-893	4450±70	3344–2926	Charcoal. Preparation and use of access area (idols).	Alonso Mathias and Bello Diéguez 1995; Bello Diéguez 1992/93; 1994
Dombate-Moment 2	CSIC-941	4430±25	3323–2928	Charcoal. Preparation and use of access area (idols).	Alonso Mathias and Bello Diéguez 1995; Bello Diéguez 1992/93; 1994
Dombate-Moment 2	CSIC-939	4410±25	3262–2924	Charcoal. Preparation and use of access area (idols).	Alonso Mathias and Bello Diéguez 1995; Bello Diéguez 1992/93; 1994
Dombate-Moment 2	CSIC-963	4380±35	3092–2911	Charcoal. Preparation and use of access area (idols).	Alonso Mathias and Bello Diéguez 1995; Bello Diéguez 1992/93; 1994
Dombate-Moment 3	CSIC-892	4230±70	3011–2586	Charcoal. Underneath closing slab (closing of monument)	Alonso Mathias and Bello Diéguez 1995; Bello Diéguez 1992/93; 1994
Dombate-Moment 3	CSIC-948	4200±30	2894–2678	Charcoal. Access area, underneath closing slab (closing of monument)	Alonso Mathias and Bello Diéguez 1995; Bello Diéguez 1992/93; 1994
Dombate-Moment 4	CSIC-1066	4090±60	2872–2489	Charcoal. Late activity – movement of soil.	Alonso Mathias and Bello Diéguez 1995; Bello Diéguez 1992/93; 1994
Dombate-Moment 4	CSIC-962	4020±30	2620–2471	Charcoal. Late activity – movement of soil.	Alonso Mathias and Bello Diéguez 1995; Bello Diéguez 1992/93; 1994

Genealogies of imagery: megalithic tombs in Atlantic Iberia

Making is an on-going process through which the mediatory role of art is most clearly exposed. The re-use of older decorated standing stones in the building of megalithic tombs illustrates this

point well. This phenomenon has been attested in Iberia for some time. The well-known gallery grave of Soto 1 (Trigueros, Huelva), southern Spain, was studied by Hugo Obermaier (1924, 14), who noticed that at least one of its numerous decorated orthostats was an older statue-menhir re-used, upside down, in the fabric of the tomb (orthostat I23: [Fig. 14.7](#)) (Shee Twohig 1981, 159–60, figs. 70–2). Research in southern Iberia has revealed that, far from being marginal, the re-use of ancient decorated menhirs or stelae seems to be a prevalent phenomenon (Bueno Ramírez *et al.* 2007; 2015).

Recent archaeological excavations also produce a wealth of ancient remains located beneath megalithic tombs, such as pits from which standing stones re-used for tomb building originally came. In Soto 1, for instance, recent excavations have recovered evidence suggesting that the gallery grave was built with decorated standing stones that came from a dismantled stone enclosure on top of which the tomb and its covering mound were constructed (Linares Catela *et al.* 2014; for information on another interesting case, monument 7 of the necropolis of Alcalar (Portimao, Faro, Portugal), see Díaz-Guardamino 2004; Morán and Parreira 2004). Orthostats composing the gallery were subsequently re-shaped and re-decorated with new engravings and painting, at times re-elaborating on existing shapes and motifs (Balbín Behrmann and Bueno Ramírez 1996b; Linares Catela *et al.* 2014, 28–33).



Figure 14.7. Decorated orthostats in the gallery grave of Soto 1 (Trigueros, Huelva, Spain). On the right of this image is Orthostat I23, a re-used statue-menhir showing, amongst others, a ‘T’-shaped motif in low relief on its lower end, interpreted as an inverted face (image: Miguel Ángel Blanco de la Rubia, courtesy of the Department of Culture of the Andalusian Regional Government).

As has been shown for megalithic tomb art in Britain and

Ireland (see above), tomb building and decoration developed in tandem and were inextricably linked. The gallery grave of Alberite (Villamartín, Cádiz, Spain) exemplifies this well, since, apparently, orthostasts were engraved and covered with red paint during the process of monument construction. This was revealed through recent consolidation works which involved the momentary displacement of some of the orthostats, disclosing parts of stones that bore painting and which had been buried and concealed since the very construction of the monument (Balbín Behrmann and Bueno Ramírez 1996a, 290–1). The detailed analysis of direct radiocarbon dates of organic pigments in some burial chambers from north-west Iberia have revealed, in some instances, two or more superimposed episodes of painting (i.e. Monte dos Marxos and Coto dos Mouros; [Table 14.1](#) and [Fig. 14.8](#) (Carrera Ramírez and Fábregas Valcarce 2008). Remarkably, in the dolmen of Monte dos Marxos there are two superimposed layers of painting that possibly took place centuries apart¹ but which seem, nonetheless, to replicate a similar design (Carrera Ramírez and Fábregas Valcarce 2008, 83, fig. 4).

Art making accompanied megalithic architectures throughout their primary lives. This is found in the well-known dolmen of Antelas (Oliveira de Frades, Viseu, Portugal; Shee Twohig 1981, 150–1, figs 37–8), whose construction has been dated to 4000–3700 cal BC, whereas the elaborate geometric composition painted in black and red on the backstone of the chamber could have been painted some centuries later, as suggested by a radiocarbon date obtained from a sample of black pigment² (3635–3139 cal BC: [Table 14.1](#) and [Fig. 14.9](#)) (Cruz 1995, 102, fig. 4, table iv). Other monumental architectures underwent structural modifications in later stages of their lives. In the case of the dolmen of Dombate (*reciente*) Cabana, A Coruña, Spain, a series of radiocarbon dates suggest that the entrance was enlarged some centuries after the monument was built ([Table 14.1](#) and [Fig. 14.9](#)). This enlargement was accompanied by the deposition of twenty small ‘idols’

positioned in a row marking the threshold into the monument and, possibly, by the painting of the chamber and corridor, although this has not been confirmed through radiocarbon dating (Bello Diéguez 1994, 301–2; 1995).

Art as long-term process: Atlantic and Schematic rock art

Atlantic Iberia is home to countless post-Palaeolithic open-air and cave rock art sites. The rock art found in this vast region has been traditionally categorised into two ‘traditions’ or ‘styles’ with complementary and only slightly overlapping distributions: Atlantic (or Galician) rock art, found in the north-west, and Schematic rock art, distributed along the mountainous systems that frame the Iberian Central Plateau in the Atlantic basin, as well as across the Iberian Mediterranean basin (for some general overviews see Alves 2002; Bradley 2009, 105–12; Bradley and Fábregas 1998; Fairén-Jiménez 2015; Gomez-Barrera 1991).

Atlantic rock art seems to have been exclusively engraved. Its dating has been a matter of some debate but recent interpretations tend to view this as a long-lived, changing tradition (Bradley and Fábregas 1998; Santos Estévez 2013). The earliest Atlantic art, attributed to the Neolithic, would consist entirely of geometric designs (cup marks, spirals and concentric circles). During the Bronze Age, focus seems to have shifted towards the representation of weapons and ‘idols’, whereas during the Iron Age, human figures and animals, especially stags, became the central themes of this tradition. The location of the art in the landscape and its visibility also seem to have varied through time (Santos Estévez 2010; 2013). During the Neolithic, Atlantic art was typically engraved on flat outcrops located around moist basins and close to natural pathways, usually within the settled or exploited land. In the Bronze Age the art was carved on more conspicuous rock surfaces, on vertical or almost vertical panels

frequently accruing complex compositions, and concentrated on the verge of the domesticated land.

Schematic art is extensive geographically and chronologically and, as Bradley (2009, 105) and Fairén-Jiménez (2015, 843) put it in two recent syntheses, it is very difficult to characterise. It comprises a long-lasting tradition that spans the Neolithic to Bronze Age in Atlantic Iberia. It consists of stylised, mostly painted but also engraved, motifs. Whilst varied, its repertoire seems to be centred on the representation of (generally male) human figures, animals (e.g. deer, goats), representations of the sun and 'idols', including oculi. The location of Schematic art is certainly varied. It can be found on outcrops, rock shelters and even caves. When located in the open air, panels can be accessible, located near passage ways, or be isolated in remote locations. In Atlantic Iberia the relationship between imagery and landscape location shows dissimilar patterns in different regions – for a comparison see the north of Portugal (Bradley 2009, 106–12) and the middle Tagus (e.g. Bueno Ramírez *et al.* 2004; Collado Giraldo *et al.* 2015). Nonetheless, there seems to be a common pattern of association between more richly decorated panels or sites and passage zones or liminal locations (e.g. Bradley 2009, 110–12; Collado Giraldo and García Arranz 2007, fn 23).

Open-air rock art (Atlantic or Schematic) may be more or less visible and/or accessible but almost by definition is exposed to be encountered, re-interpreted and re-formulated over extensive periods of time (e.g. Alves Bacelar *et al.* 2013). Today, some open-air rock art panels are profusely decorated with numerous motifs and superimpositions resulting from punctuated but persistent re-configurations that took place over centuries or even millennia. These panels are paradigms of art as long-term process and, while being in constant flux, they have acted as persistent nodes in ever-changing landscapes. These 'nodes', known in Schematic and Atlantic rock art alike, seem to reiterate the significance of passage and liminality as relevant dimensions of social life throughout late

prehistory. Good examples of this are the Atlantic rock art site of Pedra das Ferraduras (Fentáns, Pontevedra, Spain; Fig. 14.10) (Santos Estévez 2010; 2013) and the Schematic art site of Cueva del Castillo (Monfragüe, Cáceres, Spain; Fig. 14.11) (Collado Giraldo and García Arranz 2007; Collado Giraldo *et al.* 2015, 75–109; Gomes *et al.* 2015). Both sites relate to passage zones or liminal spaces, and both show imagery with long-term temporalities. The recent reappraisal of the Pedra das Ferraduras suggests that this large outcrop was possibly engraved in three distinct phases (Neolithic, Bronze Age and Iron Age). Different faces of the outcrop with varying orientations seem to have been used in each period to carve new motifs, erase, and ‘re-use’ existing ones, reconfiguring the iconography of the whole outcrop and reproducing norms that were broadly shared in each period (Santos Estévez 2013, 232–3).

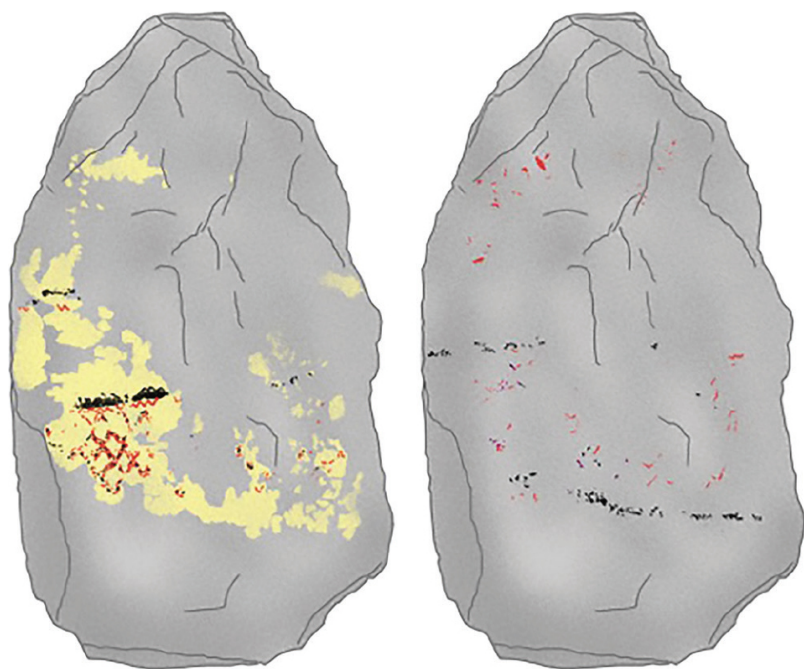


Figure 14.8. Tracing of one of the orthostats of the dolmen of Monte dos Marxos (Rodeiro, Pontevedra, Spain). To the right is the oldest

layer, to the left the most recent. The dolmen was destroyed in AD 2000 and, whilst the slab was originally published with a different orientation (Carrera and Fábregas 2008), a new examination by F. Carrera suggests that the slab was positioned as it is shown in this image (image: Fernando Carrera and Ramón Fábregas).

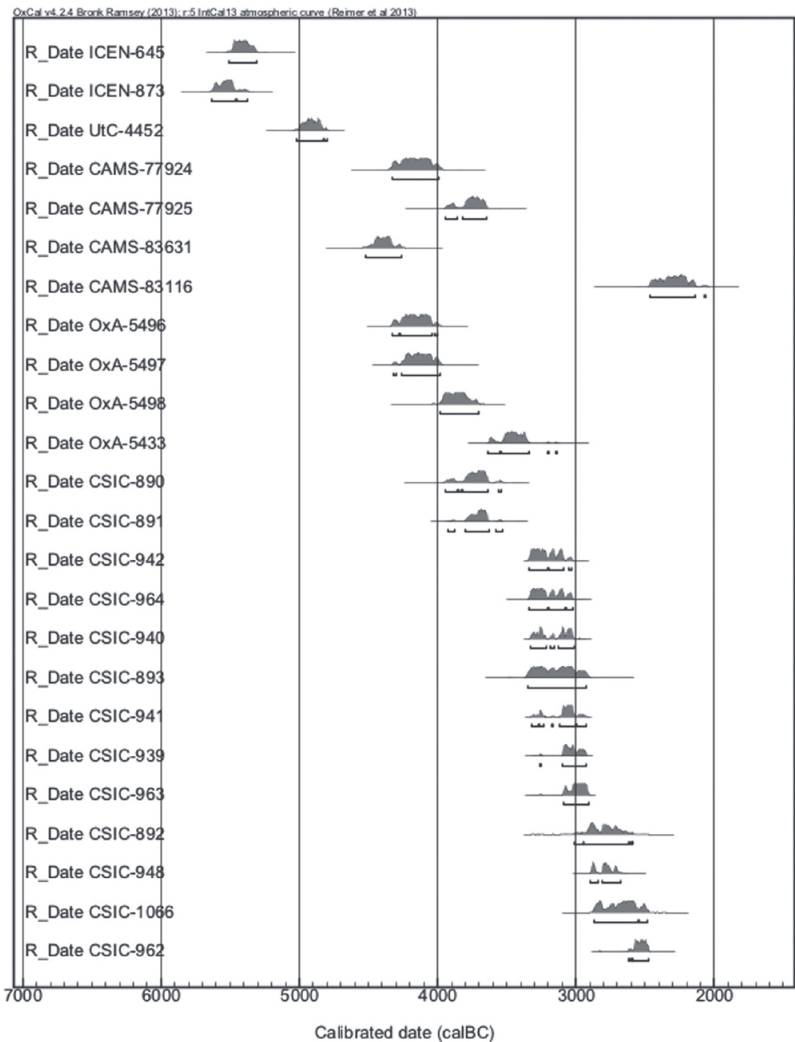


Figure 14.9. Multiple plot of the calibrated probability distributions for the radiocarbon measurements mentioned in the text. Generated using OxCal v4.2.4.

Cueva del Castillo is a deep rock shelter that is visible from afar and is located close to a relevant passage zone in the Monfragüe National Park, where more than one hundred post-Palaeolithic rock art sites have been located to date. It stands out for the preservation of its art, the variability and wealth of motifs distributed among the various panels and the numerous superimpositions among them (Collado Giraldo and García Arranz 2007). Recent reappraisal of its paintings by means of image enhancement techniques (*DStretch*) has revealed complex patterns of superimposition (Collado Giraldo *et al.* 2015); images were added and partially superimposed over existing ones, creating new compositions. In this process, inorganic pigments of different tonalities were applied deploying different tools (Gomes *et al.* 2015).

One area of panel 4 shows up to four superimpositions (Fig. 14.11). Two very stylised human figures painted with light orange pigments applied with fingers seem to belong to the earliest phase, attributed to the Neolithic. Over one of these figures a pair of oculi, possibly associated with three anthropomorphic figures situated below them, are painted with finer traces and darker red pigment. Over one of these human figures there is one more human-like figure, depicted with several arms, outlined with similar traces and colour as the previous. Finally, a large zoomorphic figure, possibly a bovid, is painted over the previous figure and one of the human figures attributed to the earliest phase. The radiometric dating of Schematic art in Iberia is still limited in terms of resolution (Ruiz *et al.* 2012). Therefore, its dating still relies largely upon formal parallels with decorated pottery and portable art associated with radiocarbon dates (Ruiz *et al.* 2012, table 3; Torregrosa Giménez and Galiana Botella 2001). This kind of information serves to attribute the oculi from panel 4 in Cueva del Castillo to the Copper Age, whereas the large bovid has been attributed to the Bronze Age (Collado Giraldo *et al.* 2015, 172, 8).

Unfinished business? Decorated artefacts in Atlantic Iberia

Iberia is probably the region in western Europe with the richest and most varied collection of Neolithic and Chalcolithic portable art (Almagro Gorbea 1973). The diversity of materials is immense: (fired) clay, a broad variety of rocks (i.e. schist, limestone, marble, variscite), bone (animal and human – Delibes de Castro and Paz Fernández 2000), gold (Hernando 1983; Murillo Barroso *et al.* 2015) and even ivory (from African and Asiatic elephant, mammoth and sperm whale; García Sanjuán *et al.* 2013; Valera *et al.* 2015). These can be artefacts of known functionality, such as containers, personal ornaments (pins, beads), combs, crooks and parts of weapons (hilt and sheath), or figurines and ‘idols’, these possibly constituting one of the most intriguing and varied samples of imagery known in Neolithic western Europe. Themes vary largely between recognisable forms (animal, human and human-like figures, oculi – frequently deployed to depict eyes of human figures or ‘idols’, phalli, suns) and more abstract designs (geometric designs, including body decoration on human representations, plaques, lobulated figures, etc.). Notably, these can be represented two- and three-dimensionally through techniques such as carving or moulding. Pigments and other substances (i.e. bone or calcium carbonate) have been detected on some artefacts, indicating the possible broad use of these additive techniques to decorate these artefacts (i.e. Thomas 2011).



Figure 14.10. View of a flat area of the Pedra das Ferraduras (Fentáns, Pontevedra, Spain), showing a series of engravings attributed to the Neolithic (image: Manuel Santos Estévez).

Traditionally, these artefacts have been categorised into ‘functional’ types (i.e. vases, idols, etc.) and ‘morphological’ subtypes (i.e. anthropomorphic idols, plaque idols, betil idols, etc.). They are found in a diversity of contexts (i.e. domestic, funerary, votive, etc.) and while some types seem to be mainly associated with mortuary spaces (i.e. hare figurines, phalli, plaques) (Fig. 14.12), others are frequently found across different contexts (i.e. ‘symbolic’ pottery, cylinder idols). Decorated artefacts are more densely distributed across southern Iberia but, still, a significant number of cases are also found in the north (see for example Bueno Ramírez *et al.* 2003; Fábregas Valcarce 1993; Mujika Alustiza 1998).

Research on decorated artefacts has been largely focused on the search for symbolic meanings. In this context, the examination of contextual associations and, more frequently, formal analogies

and patterns across object categories, including rock art, have been seminal (Acosta 1967; Cacho *et al.* 2010). Specific representations and decorative patterns have been interpreted, for example, as symbols of collective identities (local or regional: Bueno Ramírez 1992; Hurtado Pérez 2010), memories (genealogical affiliation: Lillios 2008), or as religious deities ('Mother Goddess': Gonçalves 2008). Recently, work has been done on material characterisation and provenancing, as well as on the manufacture of these objects, producing results with great potential to develop a new understanding in social terms (see for example García Sanjuán *et al.* 2013; Nocete *et al.* 2013; Murillo Barroso *et al.* 2015; Valera *et al.* 2015 and papers in Cacho *et al.* 2010). Yet, images and representations are still broadly held as materialisations of existing templates.



Figure 14.11. Detail of panel 4 in the Cueva del Castillo (Monfragüe, Cáceres, Spain). Photograph treated with DStretch. The tracing shows a complex series of superimposed motifs (from Collado et al. 2015, figs 72–3).

Attempts to decode symbolic meanings have masked the mediatory role of portable art in social life. Shifting the focusing into process, on the other hand, has the potential to disclose the emergent qualities and active role of decorated artefacts in cultural and social production. Iberian engraved stone plaques, also known as ‘plaque idols’ or ‘slate plaques’, are a good example (Fig. 14.12). They have attracted the attention of scholars since

the nineteenth century. In a recent comprehensive work on the subject, Lillios estimated that there are more than 2000, perhaps close to 4000, decorated plaques held in museum collections in Iberia (Lillios 2008, 17). While they share a common scheme – they are made of stone, usually of trapezoidal shape, measure between 8–10 and 20–25cm long and around 10cm wide and bear geometric decoration – there is considerable variation in the geometric patterns deployed to decorate them (Lillios 2008, chapter 2). They are generally found in collective funerary contexts which are frequently disturbed, often in regions where acidic soils prevent the preservation of osteological remains. Therefore, their association with specific individuals is difficult to establish, although some evidence points in that direction (Gonçalves 2003b, 222).

Workshops for manufacturing plaques have been known for some time (Calado 2006, 80–1, figs 22–7; Gonçalves 1983–84), but the very process of their manufacture has only been explored more recently (i.e. Gonçalves 2003b, 264–5; 2004, 236–54; Gonçalves *et al.* 2005; Lillios 2008, 82–103). For more than two decades, Gonçalves has maintained that the decorated plaques are expressions of a common religious framework shared among the populations of the Iberian south-west. Decorated plaques, he argues, were standardised representations of the Neolithic ‘Mother Goddess’, a hypothesis that has been refuted by others (Bueno Ramírez 1992; Lillios 2008). According to Gonçalves, plaques were manufactured following shared norms – in which symmetry was key – in a variety of production centres and circulated through exchange (Gonçalves 1989; 2008). In a paper devoted to rare, but relevant, examples showing asymmetric or ‘unfinished’ decoration found in funerary contexts (Gonçalves 2003a), he rejects the idea of this asymmetry as resulting from artistic production. Instead, he attributes it to the ‘degeneration’ of the symbolic framework that sustained, in his interpretation, the production of these images. In this view, plaques with asymmetric

decoration, sometimes with a rather unfinished appearance, are still representing a 'degenerate' version of a symbolic template.

In a recent reassessment of engraved stone plaques (Lillios 2008; see also 2003; 2004), Lillios proposes that the largest group, the so-called 'Classic' type, may have been deployed to codify information about the genealogical affiliation of deceased elite individuals. Plaque manufacture is considered in the light of inscriptive mnemonic practices, since genealogical information would be recorded through the carving of a specific number of horizontal registers. A use-wear experiment suggested that plaques were probably created to be deposited with the deceased after they were manufactured (Lillios 2008, 109). Lillios regards the asymmetric decoration on some plaques as intentional and meaningful but provides no explanation in the light of the genealogical model (Lillios 2008, 42). Cases with 'unfinished' or chaotic decoration are interpreted as practice plaques for apprentices, whereas she does not provide a specific interpretation for the re-use of plaques (Lillios 2008, 72–4, 110). Gonçalves, who has treated the re-use of plaques more extensively, suggests two possibilities: that they were re-used to save work, or that they were re-interpreted in the context of a new religious situation (Gonçalves *et al.* 2003).

'Unfinished', chaotic, asymmetric or re-used plaques constitute a small sample in the large population of known plaques, but they are relevant since they expose the limitations of the meaning-centred hypotheses proposed until now, and highlight the significance of performances, marks and materials involved in their making. The hypothesis of the deposition of 'practice plaques' in rather formalised funerary contexts does not fit well within the genealogical model, while the underlying pattern structuring the morphology of the decoration of anomalous cases proposed by Gonçalves is difficult to visualise. Rather, the creation of a plaque itself may have been invested with special significance – the outcomes, regardless of their formal attachment to

orthodoxy, were relevant to be deposited in funerary deposits, as it is attested in Anta Grande da Ordem (Alentejo, Portugal; [Fig. 14.12](#)). This is all the more significant when we consider that these anomalous cases are found in areas where slate is abundant and available to manufacture new ‘normalised’ plaques in case the available ones were ‘defective’, and they could be mended since decorating a plaque after it has been shaped would have been relatively easy (Lillios 2008, 86–96). As the re-used plaques reveal, sometimes an old plaque was preferred to creating a new plaque – most probably on the same site – maybe for its aesthetic qualities or because it was already fragmented.



Figure 14.12. Grave goods documented in the passage grave of Anta Grande da Ordem (Portalegre, Alentejo, Portugal), including various decorated stone plaques (image: Leisner and Leisner 1959, plate 14).

Plaque-making may have been an important mnemonic activity in itself, as put forward by Lillios (2008, 174–5), but the previous observations encourage us to go even further and suggest that these activities may have held at least as much significance as the symbolic meanings once attached to the designs produced by

them, inviting us to place our focus on materials and performance in future research.

Marks and histories: comparisons and discussions

In both regions discussed – Britain and Ireland and Iberia – there is extensive evidence for reworking and re-use in Neolithic art. In the case of the decorated Neolithic artefacts of Britain we now have evidence for erasure, re-marking and superimposition in a host of different media and artefact types. In the case of Irish passage tombs there is evidence for erasure and superimposition, and for a close relationship between carving and building. This is paralleled by the evidence for extensive reworking, for the re-use of building materials, and for re-painting in Iberian passage tombs (sometimes after the lapse of considerable timespans) and in the reworking of the menhirs of the Algarve. It is also the case for the decorated artefacts of Neolithic and Chalcolithic Iberia, particularly the schist plaques.

These examples highlight pervasive practices occurring across the entire Neolithic (from the earliest Neolithic to the Chalcolithic) and over a considerable geographic extent (from northern Scotland to southern Spain). We believe that a consideration of processes of making, and the practices of erasure, superimposition and reworking is essential to a holistic understanding of Neolithic art. We can no longer rely on purely iconographic or stylistic analyses alone; iconographic analyses must be combined with a proper study of processes of making if we are to realise the full potential of this material. Formal and stylistic analyses only offer a partial picture of Neolithic visual activities. To provide a rounded picture of Neolithic art we need to also consider practices of making.

Our paper has highlighted the importance of understanding processes of making, and the changing practices associated with

Neolithic art. This is ironic as the comprehension of long sequences of change has been a leitmotif of Alasdair's archaeological career. It is doubtful that analysis of Neolithic art will ever be linked with detailed Bayesian chronologies, due to the problems of context associated with this material. Nevertheless, the next step in our analyses must emulate Alasdair's recent work to understand these changing practices of visualisation over long sequences of time.

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Notes

1

The analysis of the samples of black pigment determined that they were composed of charcoal and, therefore, an 'old wood' effect should be borne in mind.

2

The samples from Antelas could also be affected by an 'old wood' effect since they were all charcoal or derived from it (black pigments).

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Community building: houses and people in Neolithic Britain

Alistair J. Barclay and Oliver J. T. Harris

To enter another culture is to stand nervously in front of an alien house and to step inside a world of unfamiliar objects and strange people.

Carsten and Hugh-Jones 1995, 4

Like almost every area of the European Neolithic one cares to mention, it is hard to overstate Alasdair's contribution towards our understanding of the unfamiliar, alien houses and strange people of this period. From the publication of his PhD (Whittle 1977, 46–8), via early excavations in Shetland (Whittle *et al.* 1986), to his discussions of buildings as process in south-east Europe (Whittle 1996a) and the interweaving of house and identity in the

Linearbandkeramik (LBK) (Whittle 2003; 2009), he has always demanded that we think about what it means to dwell in the world, and the role of houses within society. Beyond houses themselves, when discussing ideas of movement and mobility, Alasdair has had the capacity to produce astonishingly insightful pieces of work that remain central to the literature, such as *Moving on and moving around* (Whittle 1997). This latter article saw Alasdair examine the different kinds of mobility strategy that might have existed during the early Neolithic of Britain. Famously, he posited the idea of tethered mobility: that whilst people may have had connections to specific places, they were able to move out and explore the wider world around them in diverse and complex ways (Whittle 1997, 21). Houses did not form a major part of this narrative, and that is of little surprise. One year earlier a different volume published by the Neolithic Studies Group (Darvill and Thomas 1996) had stressed the small number of houses that were known in Neolithic Britain and Ireland, including the earliest phases.

Twenty years later the picture is quite different – at least in some areas and in some ways. Balbridie no longer stands as the sole example of a timber hall in Scotland (Brophy 2007) (Fig. 15.1), now it is one of several excavated examples. In England, White Horse Stone (Kent) has joined Yarnton (Oxfordshire) and Lismore Fields (Derbyshire) as another type of ‘hall’ structure (Figs 15.1–2) known from the earliest period. Gareth Chaffey has excavated an early Neolithic ‘village’ consisting of possible halls and houses at Horton, Berkshire (Chaffey and Barclay 2013; Chaffey and Brook 2012; Symonds 2014), that has more in common with sites in Ireland (Smyth 2014). Indeed, whilst it is that side of the Irish Sea where the evidence for early Neolithic houses has really exploded, with over 90 recognised so far (Smyth 2014, 21), there remains a growing body of evidence from different parts of Britain (e.g. Yorkshire Dales: Gibson 2014, 11). Alongside the resurgence of houses we have seen extended

investigation of whether these amount to ‘house societies’ (Carsten and Hugh-Jones 1995; Cooney 2003, 52; Richards and Jones 2016) – indeed Julian Thomas (2013, 312) has argued we can use this term to conceptualise the British Neolithic even in the (many) areas where houses remain elusive. In this paper we want to consider the interrelationship of people and houses in the early Neolithic of Britain. In a way that we hope Alasdair would be interested in, we want to consider how different kinds of houses help to produce different kinds of communities through the ways that they acted as active participants in the worlds in which they were constructed. We also want to think about those parts of Britain where substantial timber houses continue to escape detection (e.g. Wessex); what might this absence mean? Fundamentally, rather than advocating a model for the Neolithic based around a single anthropological analogue, we propose that different kinds of ways of being Neolithic existed in Britain, and were articulated through the presence (and also absence) of different kinds of houses.

Building ideas

The 1996 publication of *Neolithic houses in north-west Europe and beyond* brought together the current state of knowledge and thinking on buildings in Neolithic Britain and Ireland (Darvill and Thomas 1996). The emerging themes outlined in this collection of papers have been tested by the results of the development-led archaeology that came into existence in the early 1990s. Discoveries made in the intervening 25 years have brought the various regions of Britain and Ireland into sharp contrast (Brophy 2007; Hey and Barclay 2007; Smyth 2014). As noted above, in parts of Ireland the number of buildings has increased dramatically, whilst in Britain fewer buildings have been added to what was known by the mid-1990s. In many regions of England buildings remain absent or rare, a position that is also matched by

Scotland outside the eastern lowlands. Nevertheless, what is now clear is that in the early centuries of the fourth millennium BC *some* societies in Britain and Ireland decided to build substantial structures from wood and other organic materials. We know that the working of wood was part of everyday life, as were the tools and the practical skills and knowledge. It is not that these societies were without houses, but rather the question is why did they decide to start building them in timber? To do so was to fix them within a landscape and in so doing to tether the routines of daily life. But what were these routines? Some have argued that these structures served as domestic dwellings, for others they represent places for community gatherings and for some they may have been dwellings created for spirits and ancestors (see Barclay *et al.* 2002; Brophy 2007; Rowley-Conwy 2004; Sheridan 2010; Thomas 2013; Smyth 2014).

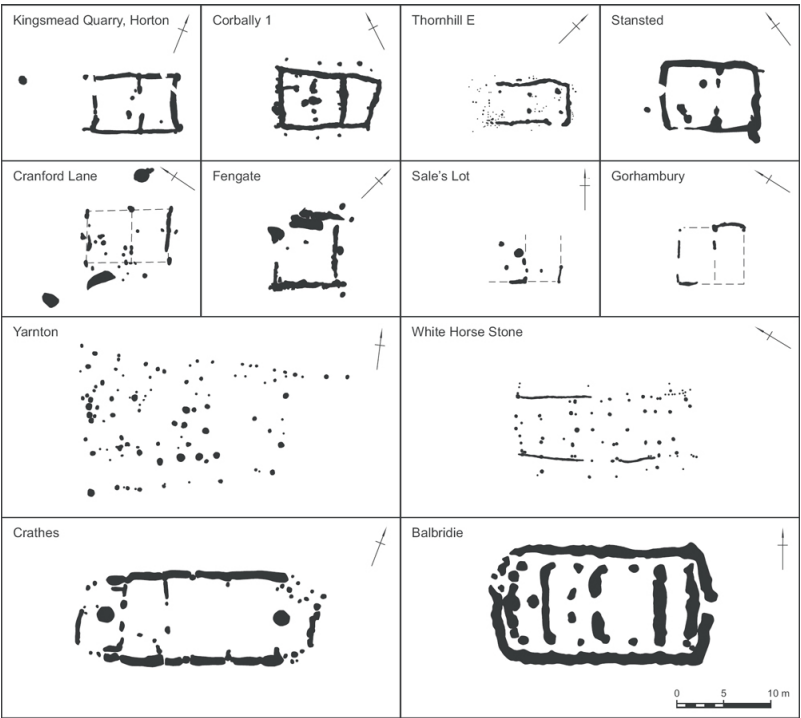


Figure 15.1. Comparative range of early Neolithic buildings from

Britain and Ireland including Horton, Warren Field (Crathes), White Horse Stone and Yarnton (after Chaffey et al. forthcoming).

Historically a house can serve a variety of functions from a place to dwell, for counting, for prayer, for storing the dead, for governance and as the seat of nobility (Bradley 2013). It seems likely that the timber buildings of the earliest Neolithic were almost certainly intended for more than one purpose. This is supported by the range and complexity of floor plans and their association with the residues of everyday living, hearths and/or mortuary remains. Their ground plans reveal the different ideas of what a building could be (Fig. 15.1), while the same physical remains also betray how the builders and materials together imposed structure on a community: from the number and position of doorways, long aisles, internal divisions and the decision to build rectilinear rather than circular designs. We must also consider the inter-relationship of these constructions: at Horton, Berkshire, and Lismore Fields, Derbyshire, we find long houses alongside smaller shorter structures hinting that some buildings may have played a subordinate role either for people or for animals. Similarly, houses were also built near or were referenced by monuments – most notably at White Horse Stone, Kent and also Yarnton, Oxfordshire.

One technique that may help bring about clearer understanding is the emergence of precise and robust radiocarbon chronology, a development that Alasdair has been at the forefront of in his collaborative work with Alex Bayliss and Frances Healy (Whittle *et al.* 2011). The Bayesian approach to radiocarbon dating provides a useful tool in which the temporality of house building can be addressed, allowing such questions as the date of house construction, period of use and date of abandonment. Here the longevity of certain houses or halls and the likely central role they played within society can be tested. Thus, as we will see in more detail below, the house at White Horse Stone has been shown to

have been in use for at least 250 years and maybe just over 300 years depending on the taphonomic interpretation of the samples selected, a period of time that exceeds several lifetimes. Through a process of construction (birth), maintenance and enlargement, the building would have grown (matured) with its resident community. Those that occupied the building would have had memories of the previous generations, including those (founders) involved in its building, and through caring for the building those same people gave it a future as a place for new generations to experience a similar world. These structures contained not just the people but also their ideas, memories and history. The building and its inhabitants contained a past and actively shaped a future. The use of this one building not only marked the beginnings of the Neolithic but it stayed in use throughout a period when the uptake of farming practices was spreading across Britain, and in comparison, it stayed in use three times as long as the houses at Horton and Llandygai (Barclay forthcoming; Kenney 2008). In addition the White Horse Stone building, like many of the houses in Britain and Ireland, may have gone out of use with the appearance and increase of large ceremonial monuments, in particular causewayed enclosures.

Despite the differences in form and duration of the structures built in parts of Britain and Ireland, Gabriel Cooney (2003) and, more recently, Julian Thomas (2013) have proposed that we can best understand the Neolithic through the anthropological concept of house societies (see also Richards and Jones 2016). This notion, made famous by Lévi-Strauss (e.g. 1982) in particular, is widespread in the anthropological literature and suggests that certain kinds of societies are best defined through houses that form the central conceptual and physical hub of particular communities. House societies are those in which the social group is defined through relationships with various kinds of property and collective identity, with 'continuity invested in material things' (Thomas 2013, 291). Here the house, as a physical entity, comes

both to stand for, and to produce, the house as a corporate social group. The house here can be both a central hub for an otherwise dispersed kin group, or can allow resources to be reproduced and shared independent of 'biological' relatedness. In the Neolithic of Britain, Thomas (2013) argues, these connections can be traced through the use of timber halls and other houses, and even where houses are not constructed, we can still see house societies present in the monuments built later in the Neolithic, such as chambered tombs. Furthermore, these houses are the critical means by which indigenous hunter-gatherers became farmers (Thomas 2013, 296). There is much to recommend this approach, but we are doubtful that this single anthropological analogue in the end helps us to think through the variety of different communities produced with, alongside and *without* houses in Neolithic Britain. If all the societies in Neolithic Britain that built houses (in different forms), and all of those that did not, are house societies, then to what extent will this concept allow us to really tease out the acts of material construction that forged different kinds of community in this period? Thus whilst Thomas' work forces us to confront the house (in both its presence and absence) as once more central to the Neolithic of Britain, it is in variety and difference, we suggest, that we can explore what made up the complex worlds and communities of the fourth millennium BC.

Making houses, building communities

One element of the discussion of house societies that is certainly useful, however, is the emphasis that this places on the fact that houses are much more than simply just expressions of people's ideas about the world, but active players in the shaping of experience and understanding. This recognition is an important starting point in helping us think about how houses and communities interact. As authors like Lesley McFadyen (e.g. 2007a; 2007b) have shown when considering the construction of

monuments, building architecture is also about building people, and through them communities. Recently, archaeologists have begun to grant non-humans a much more vibrant and active role in the pasts that we write about (e.g. papers in Alberti *et al.* 2013; Fowler 2013; Harris 2014a; 2014b). This means when we think about communities we need to consider them as much more than simply groups of people that make and have things. Instead we can conceptualise them as complex mixtures of people, animals, places, materials, buildings, plants and so on (Harris 2013; 2014a; cf. Thomas 2013, 384). As active players within these mixtures, houses are not solely the outcome of human decisions, or even human practices, but rather emerge alongside people. This means that different kinds of houses do not simply symbolise different kinds of community, but actively participate in their creation. Architecture here is active as part of an assemblage, not merely the outcome of human understandings (Creese 2013; Harris 2016). Houses involve different materials, encourage different kinds of practice and require differing kinds of maintenance. Like their human compatriots they need attention, cleaning and repairing. They live and die. Just as human beings change and continually develop so do houses, growing and shaping themselves through their interaction with the people, plants and animals they are made from and that they shelter and protect. Whether people live in shorter or longer houses, whether they live there all year or just occasionally, whether they burn them down or take parts of them away to form new structures; these are all properties of the relationships through which communities emerge and which we cannot, we suggest, reduce to the single category of house society. The existence of different kinds of community, in the sense we have defined above as a gathering of elements that extends well beyond humanity, is thus made present today in the differing kinds of houses we find as archaeologists.

Different houses, different communities

How then can we explore how differing kinds of community emerged through and alongside different kinds of houses in the British Neolithic? To explore this we want to look in more detail at three particular case studies from different places and with different kinds of houses: White Horse Stone in Kent, Horton in Berkshire and Warren Field in Aberdeenshire (Figs 15.1–2). These three different kinds of houses offer us alternative ways of exploring the emergence of different kinds of communities in Neolithic Britain.

The making of White Horse Stone

The first building we want to discuss is the White Horse Stone longhouse. Discovered in a colluviated dry valley downslope from the White Horse Stone, a possible but untested Medway megalith from which the structure takes its name, as part of the archaeological work in advance of the High Speed 1 (HS1) railway, it is one of the most significant Neolithic finds in southern Britain. George Lambrick had highlighted the potential of the dry valley following the influential work of Martin Bell, and it was whilst investigating a soil horizon that first a series of late Neolithic pits and then the timber structure were discovered. Unfortunately the soil that had sealed the building had probably been cultivated in later prehistory and this may have led to some disturbance and truncation of the floor surfaces. The house has been described in detail by Chris Hayden (2006) and then reinterpreted by Paul Garwood (2011), although it is argued here that neither of these accounts fully explores the complexity of the structure, and it is possible to develop both narratives.

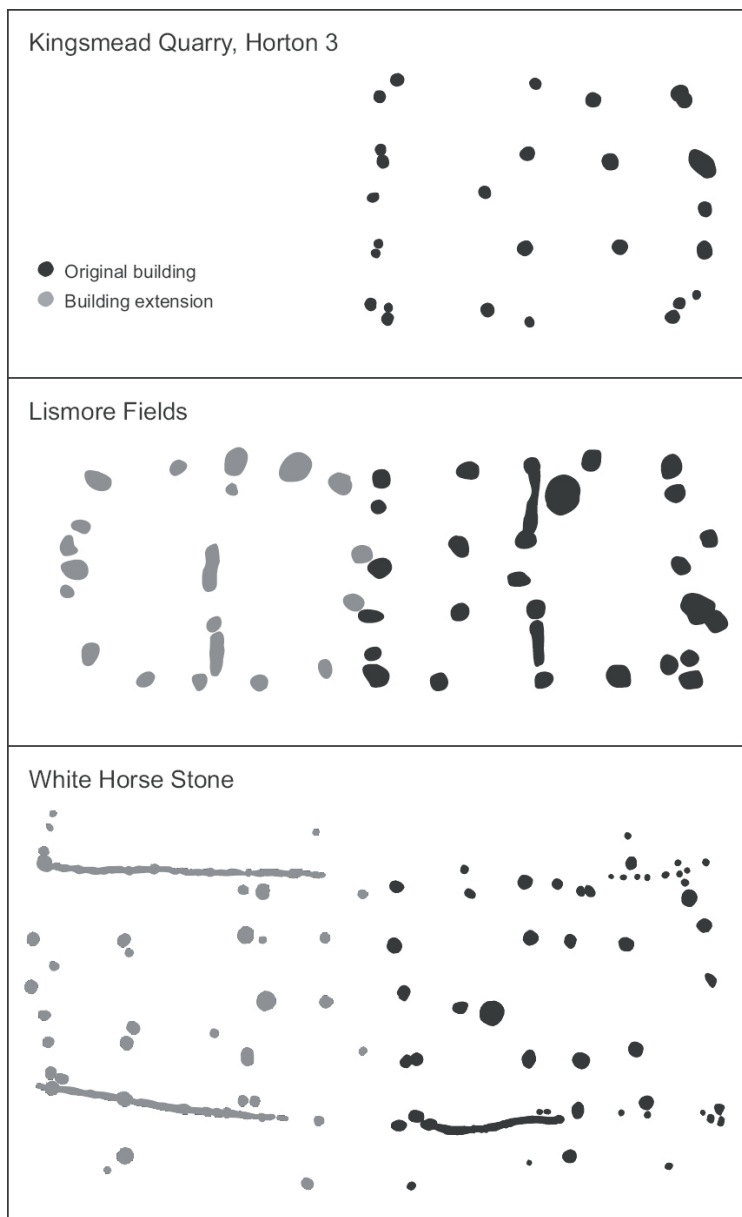


Figure 15.2. Comparative plans of White Horse Stone, Lismore Fields and Horton – different building outcomes and configurations.

As with many structures built in the Neolithic, the house may

have been constructed in stages (Fig. 15.2), as has been cogently argued by Garwood (2011, 68) following the interpretation of Lismore Fields (Daryl Garton *pers. comm.*) and the observation that the much earlier LBK longhouses were of planned modular structure (e.g. Whittle 1996b, 163–5). As with Lismore Fields building I, the White Horse Stone building appears to have been constructed first as a 10m long structure and then extended another 9m in length (Garwood 2011, 65). One detail that is largely overlooked is the possible porched entrance in the southerly corner, a feature that appears to be repeated in the extension. If this interpretation is correct then the extended structure could have functioned as a larger dwelling or as linked dwellings, each with its own entrance and hearth. Unlike Lismore Fields building I, which was composed of two different structures (a long and short house), the White Horse Stone building appears to have been extended by the addition of a similar building – an important point we return to below (Fig. 15.2). The occurrence of twin postholes predominately in the north-western part of the building could be an indicator of maintenance, with the addition or replacement of structural posts. This is supported by the suggested 300 year estimation for the duration of the building that witnessed enlargement and repair (Whittle *et al.* 2011). The structure was constructed between 4065 and 3940 cal BC and abandoned in 3745–3635 cal BC (Garwood 2011, 73; Whittle *et al.* 2011, 380).

In terms of the wider setting, the White Horse Stone building was constructed in a clearing within a largely wooded landscape, but in sight of both a large glacial deposit of sarsen stones and another, smaller and quite different Neolithic structure 240m to the south-east, known today as Pilgrim's Way (Garwood 2011, 73). The evidence for activity at the site is fairly limited, in part because the floor layer does not survive, and the artefactual evidence is sparse, made up of 66 sherds of abraded early Neolithic pottery, some fragmentary animal bones and debitage

from flint working (Garwood 2011, 69–71). All of this material was recovered from sealed contexts, but was largely comparable with material from Neolithic features that predate the site. Much of this material was burnt (Garwood 2011, 71).

How can we use this site to think about the emergence of a particular kind of community? Whereas Garwood (2011, 90) argues the site was visited only occasionally, we would suggest that it is more likely that it was regularly occupied. This is not to switch from an emphasis on ‘ritual’ to one of ‘domestic’ life – such an opposition as Garwood (2011, 82) notes is unlikely to be helpful (although it is always seductive: see Garwood 2011, 90). Nor is it to deny that the house had a ‘cosmological significance’ (Garwood 2011, 90). Instead it is to see the life of the community and the life of the house as intertwined. The house was occupied for three centuries. In this period it would have required regular renewal, from the ridge in the roof, via the walls and the floor. Indeed the replacement of posts revealed in the archaeology shows us this process of renewal and repair was real. Building and using the site here are part of a single ongoing process of becoming through which the house and the community emerged together (Harris 2014a; Ingold 2011; McFadyen 2007a).

Building the structure at White Horse Stone involved gathering materials and people together at the site, this activity gathered in woods of different kind, brush or perhaps turf for the roof, animals and plants that could be cooked and eaten, tools for digging and tools for shaping wood. The acts of building were not the first to take place on the site and it is surely telling that the artefactual assemblages that exist both before and though the building’s life are so similar; some of the practices that produced communities endured through this transformation. The landscape too was gathered into the site. No attempt was made to flatten the ground, so the floor would have sloped down to the southern end. Visible from here would have been the striking collection of sarsen boulders, which as Garwood (2011, 88) rightly notes, are hardly

coincidental to the presence of the house here. These too were woven into the community. As the house persisted so communities could be added to and renewed through its presence. As a structure that existed for longer than human life spans, it would stand as the stable member of the community in comparison to the more transient human elements. Yet the house did not simply continue; it would have required work and repair, things adding to it and removing. Its apparent stability is not natural, but rather the outcome of the work of other members of the community: people, things, and materials.

If the narrative proposed above is correct, the extension of the house was not merely an expansion of existing space. Instead it suggests a potential duplication of the space that already existed, a matching half with its own porch, hearth and entrance. Such an understanding has a fundamental bearing on how we interpret space and the act of dwelling. This is not just a drive for more space to accommodate more people. Instead here we can see the way in which family and community ties were created through the mirroring of the first house. It is inviting to speculate as to what caused this: a new household joining the first; one household becoming two? Whatever the answer, what is clear here is that as new materials were gathered to the site that mirrored those already present, as new kinds of relationship were expressed materially that cited those that already existed, so a new community emerged. The history of the house at White Horse Stone is one of the building and construction of people and things together from the first clearing of this space through the centuries of building, use and expansion of the structure. This is one way in which communities in Neolithic Britain emerged; there were others, too.

Horton

Situated in the Colne Valley and only a few kilometres from the

River Thames, and the site of the later Staines (Yeoveney Lodge) causewayed enclosure, is the house site of Kingsmead Quarry, Horton. Within the quarry, which covers 34ha and is a kilometre in length, Wessex Archaeology has discovered five possible house sites. Unlike the adjoining structures seen at White House Stone, the houses are dispersed over a distance of 300m. The five possible house sites fall architecturally into three groups: two houses built with plank walls set in bedding trenches, two post and wattle structures and what could have been a lighter structure that only left a so-called house-void.

This settlement, like Lismore Fields and a number of sites in Ireland (e.g. Corbally, Co. Kildare; Cooney 2007, 557 and fig. 2), comprised a pair of house clusters. It has been noted that these clusters tend to contain one or more longhouses and other smaller buildings, the latter may have been additional or secondary dwellings, stores, work buildings or shelters for animals (see Smyth 2014, 25). At Horton the southern house cluster was spread over a distance of 150m (Fig. 15.3). At its centre was the more substantial building (house 2), a plank-built long house almost 15m in length that from the ground plan was subdivided into two rooms. Two gaps in the southern side wall trench indicate the possible existence of a double entrance. What appears to be a more substantial northern end wall faced a smaller (7m long, 5m wide) post-built building some 100m to the east (house 3). This latter building was strikingly similar to the eastern structure that comprised Lismore Fields building I (Fig. 15.2). To the north-west of the long house was another smaller post-built structure (house 4), very similar in size ($6 \times 5\text{m}$) to house 3. A second smaller ($11 \times 7\text{m}$) long house (1) was located 300m north of building 2. This building appeared not to be associated with smaller buildings, although its excavated position not far from the edge of the quarry and close to areas of disturbed ground must be noted. One possibility with this building is that some if not all of the main vertical posts were removed, a point we shall return to in

discussing building 5.

A second possible structure was excavated just 30m to the north of house 1. This was defined by an arrangement of pits that was very close in plan to the main postholes of house 1. Several interpretations of this second site can be made. One is that the posts of a possible building were removed and their positions marked by a series of pits that were then used to receive a series of selected small deposits of cultural material: pottery rim sherds, some decorated, flintwork and worked bone. A different view would see the pits mark the place of a more ephemeral building in what can be called a ‘house void or ghost’ that is the outline of a structure marked indirectly by associated features (Garrow 2006, 78). Several ‘ghost’ houses have been recognised in the south-east and these structures may have a distant and imprecise parallel in the unroofed enclosures (‘halls’) of eastern Scotland (see Brophy 2007, 85) and the later and more widely occurring long ‘mortuary’ enclosures. Significantly, radiocarbon dates from two of the pits that form the Horton house void and a developed form of Bowl pottery indicate a slightly later date than the plank-constructed timber long houses.

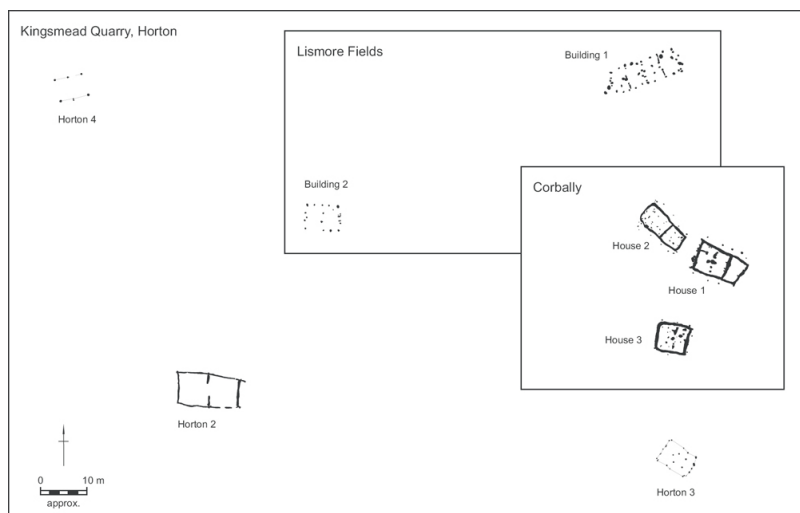


Figure 15.3. Comparative ‘villages’ – Horton, Lismore Fields and

Accepting that any archaeological interpretation of a building's function and use from the ground plan is fraught with uncertainty (Brück and Goodman 1999, 3), it seems quite plausible that what has been uncovered at Horton represents something akin to a small settlement of dispersed dwellings. At Horton both long houses were the most productive in material residues (worked flint, sherds of pottery, utilised stone, splinters of animal bone and charred plant remains), perhaps not surprising as the wall foundation trenches acted as convenient traps into which fragments accumulated. The finds 'signatures' were different from the two long houses (1 and 2). The larger building, house 2, produced a small assemblage of worked stone and also a small number of leaf-shaped arrowheads. House 1 was the only building to produce cereal grains, it contained more pottery, polished bone as well as a fragment from a Group VI axe. All of this material was small and fragmentary with the general appearance of incidental refuse, much the same as White Horse Stone. Only in the case of house 2 can a case be made for possible placed deposits. The south-west corner of the house cut a tree-throw hole into which had been placed a cache of flint that included some refitting pieces and a leaf-shaped arrowhead. It is possible that this served as a foundation deposit prior to the construction of the house.

What can we say about the communities that constructed the buildings at Horton? As at White Horse Stone of course there are the rhythms of building and constructing that brought communities together, the digging in the earth, the shaping of wood, the weaving of wattle, the gentle rhythms of repair and maintenance that did more than mimic the maintenance of community, but rather reciprocated it. Yet beyond these similarities differences also emerge. At White Horse Stone the community expanded itself in mirror image to form one long, yet simultaneously paired, building. Here the community

differentiated itself into differing locales with differing buildings in each case. In addition, the presence of structure 5, the 'ghost' house, at Horton hints at developing practices that played with the memory of houses and the memories of community. If the house posts were being dug up, we can see how the materials that forged community carried with them these connections to new locations and new locales. If the pits do indeed mark the presence of former posts then this indicates that connections with past communities could be renewed through acts of deposition, with one set of materials acting to connect to a past now physically removed. Yet here these memories reflect a site in use for perhaps only a third of the time to that of White Horse Stone. Again houses are key to understanding the communities at Horton, but in ways that reveal subtle differences to White Horse Stone.

One thing that links Horton building 3, the individual parts of White Horse Stone and a number of other Neolithic buildings (e.g. Lismore Fields building 1 and Llandygai building II) is the similarity of their ground plans. This suggests a strong sense of how buildings should be set out and an idea that was shared over distances separated by hundreds of kilometres. These ideas of how to build would have required skills of how to select and work timber, and a competent knowledge of architecture (e.g. how to possibly build a load bearing raised floor and certainly a pitched roof). Whether these buildings looked the same from the outside is a moot point, although the very close similarity between the ground plans of Lismore Fields building I and Horton 3 certainly raises this as a distinct possibility. Indeed, there are similarities with the situation in Ireland here too, and this suggests further connections. Communities drew on shared elements of an assemblage of ways of doing things, even as they explored the different temporalities and rhythms these practices could give rise to. However, in contrast to this pattern are the buildings found in the eastern lowlands of Scotland. These structures are very different in plan to those found predominantly in southern

lowland England.

Warren Field (Crathes)

To the north of the river Dee not far from Aberdeen lies the site of Warren Field. This represents a single, large, early Neolithic timber-built structure, quite distinct from the kind of village we have seen at Horton, and in plan from the structure at White Horse Stone. The building was 24m in length and 9m wide externally, defined by post-holes close together forming both the outer walls and internal dividing features (Murray and Murray 2009, 30). Axial pits at either end of the structure seem to have held large posts that defined the orientation of the structure, and may well have been put in place before the rest of the building was erected. Constructed between 3810 and 3760 cal BC, the site went out of use between 3780 and 3700 cal BC, and was probably in use for less than 50 years (Marshall 2009, 79).

Although different kinds of wood including alder, ash and willow were used in the construction, oak was the most dominant, especially in the eastern half of the building (Murray and Murray 2009, 30). The posts on this side also seem to have been more carefully positioned. There were gaps at each end of the structure, and one short side (the west in this case) may have been open-ended (Murray and Murray 2009, 34). Internally the structure was divided into four or possibly five different sections, some of which appear to have been used for different purposes looking at the distribution of lithics and pottery, the former congregating primarily in the western end, the latter in the eastern. The hall was set in a landscape replete with evidence for the growing of crops, including of bread wheat, emmer and barley and there is little evidence in the palynological evidence for any pasturing (Lancaster *et al.* 2009, 49). Longer-distance connections are evident in the pottery, however, which contains dairy and porcine fats, suggesting that the people who were present at the site had

access to animals in one form or another. Burning was an essential part of both the construction and the destruction of the house, with fire being used to prepare the timbers for felling and later being employed to bring the life of the structure to an end (Murray and Murray 2009, 55–9). Critically, before the structure was burnt down the two axial posts were dug up and removed from their settings (Murray and Murray 2009, 40).

Warren Field was certainly an important site in the landscape, comparable to the structure at Balbridie less than one kilometre away. As Murray and Murray (2009, 63) point out, the site would have required more than a small group to be connected to it, both in terms of its initial construction and also in terms of the ongoing maintenance of the crops surrounding it. Shannon Fraser has convincingly suggested that the site is quite deliberately located in the landscape, relating it to the nearby river and broader cosmological connections, and rightly argues that the choices of wood would not be arbitrary (Murray and Murray 2009, 67–8). Trees brought with them different concerns and connections, different relationships, especially in a world in which wood had previously not often been transformed in such a manner (Fraser 2009, 68). The actions and deposits in the building gathered different places and seasons together (Fraser 2009, 68). Fraser's evocative discussion reminds us how important this place was in the world in which it dwelt. However important, such connections are far more than metaphorical, symbolic or simply representational (*contra* Fraser 2009; cf. Harris 2009; 2014b). They are the very means by which communities were constructed, knitted together into the fabric of the building, maintained through its repairs. The internal structure of the building created a space where certain elements of community could be performed and not others; flint working here, pottery there. The hall did indeed help to 'define and sustain people's different roles in society and community' (Fraser 2009, 69), but it did not do so as theatre backdrop or symbolic resource, but as an active player in

the shaping of the world. This was a community defined and born in fire, and that ended, perhaps in living memory, in fire once again. As people left the burning remnants of the building behind they carried with them the axial posts they had dug up rather than let burn. Just as a community had been created in this place through their erection so it was dispersed through their movement. The community here was separating and moving on, following new paths to new places. The community went with the people, but it went with the posts as well.

How were the communities at White Horse Stone, Horton and Warren Field different from one another? In some ways they had much in common. They were farming communities in a land that had seen little agriculture before; they emerged in part through wooden timber structures. People worked flint, animals grazed and pots of similar form were made and used. Yet at the same time we can tease out real and important differences. To begin with, Warren Field was constructed in a world connected to older Mesolithic occupation. Close by, a line of Mesolithic pits were recut in the early Neolithic, connecting people here to older places in the landscape (Murray and Fraser 2009). Unlike White Horse Stone, this place drew on older connections as well as new ones. In contrast to Warren Field, at White Horse Stone the house grew and changed with the community, whilst at Horton differing houses connected to different people. This suggests a different pattern of connections to each site, differing communities emerging. In turn, the space within Warren Field was divided in more complex ways than at the other sites (cf. Thomas 2013, 303). This indicates the potential for more structured use of space, and indeed a more internally divided human community. If houses and people emerge together, then the shape of space does not merely reflect the shape of a community but rather helps to instantiate it.

Of course there are many elements of the practices at Warren Field that we can discuss in more detail than at White Horse Stone or Horton, for example the timber it was constructed from. This is

not mere happenstance. The fact that Warren Field was constructed and destroyed with fire is a critical element allowing difference to emerge; its temporality was one of transformation. The removal of the posts connects it, potentially, to the practices we saw at Horton Structures 1 and 5, showing the potent links that connected people and materials in a community. As these places moved on with people, White Horse Stone, in contrast, persisted (Fig. 15.4). In use for more than 350 years it would have been a constant in people's lives. Like the aged trees it was constructed from, it reached out, it extended, through time. This would have linked it to a routine of repair and maintenance that would have lasted throughout multiple generations. This was the central member of the community. Warren Field was different. Less temporally extensive, more energetically intensive, it gathered people close to it to work the fields that surrounded it, to deposit things in pits within it, to carry out certain actions in certain places inside it. These intensive local connections perhaps created a different and more tightly knotted community (cf. Harris 2013).

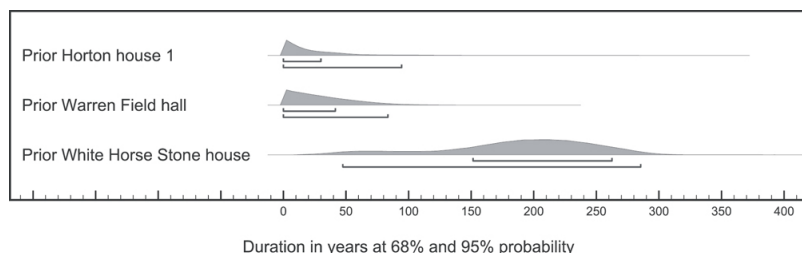


Figure 15.4. Comparative use ‘spans’ of the structures at White Horse Stone, Horton house 1 and Warren Field (Crathes) (after Barclay forthcoming).

Putting the houses into a wider context also helps us think about differences and similarities. The size of the Horton structures is important, as these sit well within the 5m to 15m range of the Irish houses (Smyth 2014, fig. 3.6) and are much smaller than the halls found in Scotland that exceed 20m in length

(Brophy 2007, table 1). Superficially Lismore Fields and White Horse Stone appear comparable to the halls but these are both composite structures comprising in both cases two attached buildings. This would leave only the structure at Yarnton, Oxfordshire, as a clear outlier within the English structures in terms of its massive size (21m in length and at least 11m wide). This structure was earlier than many of the houses and has a different layout of posts. It also contained very little cultural material in comparison to many of the houses, most notably an absence of pottery and a restricted number of more formal deposits of flintwork, burnt animal bone and cremated human bone. It certainly represents a departure from what we have discussed as houses at Horton. These wider comparisons show us again the variation amongst the communities in Britain in the fourth millennium BC that built, and were built by, houses.

Absent houses

Twenty-five years of developer-led archaeology in Britain and Ireland have certainly brought the different regions into stark contrast. Houses are still notably absent from many regions, even in Ireland where significant discoveries have been made. The discovery of multiple houses at Horton in an area where only one house (yet to be published) was known perhaps serves to demonstrate how incomplete our knowledge of the first few centuries of the Neolithic remains and how our picture can be radically altered by only a few major discoveries. However, it can also be noted that the number of other contemporaneous non-house features, including early monuments, is equally rare from many of the same regions. One possible emerging theme is that communities appear not to have adopted every practice that we now recognise as ‘early Neolithic’. In the same way that not every community built substantial timber dwellings, others perhaps chose to build tombs, to create middens or not to use pottery.

Regional diversity is increasingly being recognised as centrally important (e.g. Bishop 2015). One region where early houses are yet to be found is the chalkland of Wessex, an area where monuments rarely occur before the thirty-seventh century BC. In this area a number of big pits dug to receive quantities of feasting debris occur (e.g. Coneybury Anomaly, Roughridge Hill and Rowden). The practices that led to the construction of these pits varied, involving feasting on different kinds of animals, in different quantities over different lengths of time, but they clearly represent alternative kinds of occupation practice. Similarly, the kinds of sites occupied in eastern England, like Kilverstone and Hurst Fen with their 100 or more small filled pits, speak to repeated acts of visitation to particular locales, a rhythm and scale of occupation very different to those we have examined in detail above (Garrow 2006).

What did it mean for these communities to have an absence of substantial timber-framed houses? The first point to make, as has been powerfully demonstrated by the literature on the anthropology and archaeology of absence (e.g. Bille *et al.* 2010), is that the non-presence of houses cannot be understood as a lack, as something simply missing. Absence itself has an active presence, as Severin Fowles (2010) has so brilliantly explored. To use his example, think of the way in which your suddenly missing keys are not just absent, but *active* in their absence as your hand gropes for where they should be in your pocket (Fowles 2010, 25). Given the levels of interaction and culturally shared practices visible across Britain in this period, it is clear that the absence of houses in places like Wessex needs to be understood as the deliberate construction of an absence, of a difference, of an alternative way of having a sense of place in the world. Choosing to live without houses would have entwined people with materials differently, have meant they were freed from the responsibilities of repair and maintenance that houses demanded, their communities would thus have had different constituent parts and a different form. Thinking

through the notion of the active nature of absence emphasises the importance of what happened to the houses at the end of their lives, at the moment Warren Field was burnt down, structures 1 and 5 at Horton saw their posts removed, or White Horse Stone was abandoned. How did the absence of these places play out for people? How did the materials like the axial posts people took from Warren Field carry that absence with them? Did they move on to other places like this? Or did they move on to other ways of living, other ways of being Neolithic?

Conclusions

One of the wonderful things about Alasdair's work has been his ability to work at multiple scales, from the intimate practices of building a monument to the synthesis of the European Neolithic as a whole. 'We keep coming back to questions of scale' he once remarked (Whittle 2003, 19). Looking at the houses of early Neolithic Britain we can see multiple scales at play. There are clear regional connections, in Horton and Lismore Fields, Llandygai and Ireland. Here, and elsewhere, traditions of building, shaping and working timber to form houses emerged, and these simultaneously played their role in building and shaping communities that would have had many things in common. Simultaneously, we can also see real patterns of difference between regions. Are the Neolithic timber halls of Scotland, like the example of Warren Field discussed above, the only true 'halls' we have in Britain? In many ways these are quite different to the superficially related sites like White Horse Stone, as we have seen. Whilst even here we can trace shared elements of what it meant to be Neolithic being drawn on and interwoven, there are clearly different possibilities, ways of doing things differently, or even choosing not to do them at all.

In the three cases we have examined in depth, we can trace how people and materials worked together to produce these

related, yet distinct, senses of what it was to be Neolithic. From the endurance of White Horse Stone, with its repeated acts of maintenance, to the short-lived world of Warren Field, intensively worked and fiercely destroyed, via the smaller-scale, yet widely shared, ways of doing things at Horton, and the importance memory may have played there. In some ways these were indeed house societies, but this serves as a starting point, one that recognises the active nature of the material world, rather than an end goal for interpretation. Through the multiple scales of our analysis, made possible by publications like *Gathering time* (Whittle *et al.* 2011) in a way that has never before been obtainable, we can think both about what the communities of Neolithic Britain held in common, and how they explored the potential within that for the creative use of difference to actively shape who they were. Thinking through the ways in which houses and people brought themselves into being in related yet different ways in this period helps us get closer, we suggest, to that fundamental question Alasdair (2003, xiii) has posed: ‘what was it like, being there’?

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dreaming of retirement...

Passage graves as material technologies of wrapping

Vicki Cummings and Colin Richards

Visiting Maeshowe

One of the greatest passage graves in north-west Europe is to be found on the island of Mainland, Orkney. The situation of Maeshowe is unusual in comparison to other Orcadian passage graves (Renfrew 1979, 214); it is very low-lying and only a few hundred metres from the current shore of the loch of Harray (Fig. 16.1). It is also at the eastern edge of the monuments of the Stenness-Brodgar complex, and within clear sight of the contemporary Barnhouse village. It is also deceptive. When first viewed it seems to be a fairly unassuming grass-covered mound. Of course it is only on entry, in going inside the passage grave, that the ‘scale of its conception, the refinement of design, and quality of masonry’ (Davidson and Henshall 1989, 45) become

apparent.

However, this encounter is problematic. Today, the pathway running from the visitor centre crosses a field and skirts around the monument, which is entered through a metal gate. An area of matting guides the eager visitor across the platform towards the reconstructed passage grave entrance. What often remains unnoticed is that there is actually no point of access to Maeshowe. The metal gate that is negotiated is set within a gap in a grassy bank, which we now know to have been a continuous stone-built wall (Challands *et al.* 2005, 234–6). Equally, beyond the wall a path channels the visitor down a slope into the base of a heavily silted ditch and up the other side onto the clay platform. There is no causeway across the ditch. Obviously, the route now taken by the visitor was completely unintended by the builders of the monument; on the contrary they seem to have gone out of their way to actually prohibit access. Given the extraordinary architecture and the sophistication of interior masonry of Maeshowe, it seems unfathomable (almost unbelievable) that it should have been inaccessible. Clearly this monument requires revisiting, in all respects.

As it is the external wall and internal ditch that combine to provide barriers to entry, the most obvious narrative would be that these are later features constructed to seal the monument off from its immediate landscape. Yet, this seems not to be the case, as both Renfrew (1979, 214) and Davidson and Henshall (1989, 51) propose that the glacial clay from the ditch formed the mound material at Maeshowe. Given that The Howe (Ballin Smith 1994), the only other known Orcadian passage grave with a clay mound, also had a surrounding ditch (but with an entrance causeway), this assumption seems justified. The implication of this occurrence at Maeshowe is extraordinary, because it indicates that the practices of construction were simultaneously those of containment. Actually, the circuit of the ‘ditch’ is an illusion, with the ‘cut’ portion partial in its extent (Davidson and Henshall 1989, 143;

Renfrew 1979, 36). In the north-west it fuses with a natural depression giving the visual impression of a 'ditched' monument. Rather than pertaining to the requirement of an enclosing ditch, it has been argued that this configuration is better understood as facilitating Maeshowe to be encircled by water (Richards 2013, 88) (Fig. 16.2).

The image of Maeshowe as a passage grave wrapped by uninterrupted concentric rings of water and stone walling is one of a monument comprising impermeable outer skins of different substances. Interestingly, the technology of wrapping does not stop at the platform (which is also partially constructed by extending a natural knoll), but is also a feature of the mound and its constitution. Clearly, its composition of clay and stones surprised Childe (1956, 162), as did the different elements creating concentric skins within the fabric of the mound. At the outer edge, and concentric to the mound, a turf bank had a shallow trench cut into it which was considered by Childe to be 'the foundation for a palisade' (Childe 1956, 162). As Childe continued excavating a trench through the mound, two further concentric rings of masonry were encountered, but in each case they merely sat in the clay and stone mound (Fig. 16.2). Structurally 'they are not revetment walls, for they support nothing' declares a bewildered Kilbride-Jones, and as 'they served no practical purpose... they were symbolic' (Kilbride-Jones 1973, 78). It seems as if at Maeshowe the concentric stone walls were merely positioned within the fabric of the mound to provide some form of masonry 'binding'. When combining the construction of the mound with the outer wall and ditch, the question arises as to what could possibly have been so potent or 'dangerous' that it was deemed necessary to be bound or wrapped in such a substantial and diverse manner from the moment of its creation?



Figure 16.1. Aerial view of Maeshowe passage grave (image courtesy of Historic Environment Scotland).

‘Enclosing’ monuments

Maeshowe is not alone in being a Neolithic monument that is constituted by a number of enveloping structural features. Indeed, perhaps the most striking aspect of many of the different forms of monumental architecture built throughout the late fourth and into the early third millennium cal BC is the consistent emphasis on what is commonly termed ‘enclosure’. Because of this occurrence, spatial understanding tends to emphasise duality, for example, interior–exterior, regardless of the architecture or material composition of the monument. For example, when discussing the spatial order of henge monuments, Jan Harding notes that the bank and ditch divide ‘space into that which is “inside” and that which is “outside”, and the act of enclosure creates a place which is different or separate’ (Harding 2003, 39). In comparing Harding’s interpretation to that provided by Alex Gibson in regard to a completely different monumental form, the timber circle, we discover an identical discourse when he states that ‘enclosure itself

defines space and creates a difference, the area within and the area without' (Gibson 1998a, 90). In a similar vein, Alasdair Whittle's comments regarding the spatial representation of Stonehenge could equally be extended to encompass all stone circles when he says that it 'drew on a basic symbolism of the circle, which served to both include and exclude, to separate and unite' (Whittle 1997a, 163). In terms of the topic of this paper, a similar reading of spatial order based on separation and division has been used to interpret the architecture and construction of passage graves (e.g. Robin 2010; Sharples 1985). Once again the inside–outside distinction of space is highlighted in terms of inclusion and exclusion, in the case of the passage grave to an extreme degree (Richards 1988, 54).

Such conformity of interpretation must lie in the observation that all these monuments are effectively homologous in being predicated on architectures of division and separation. Even with much larger monumental installations, for instance the massive palisade enclosures at Dunragit, Dumfriesshire (Thomas 2015), or the henge enclosures of Durrington Walls, Marden and Mount Pleasant, the architecture emphasises containment (Gibson 1998b, 77). Surely Bradley (1993, 103) is correct in characterising such monumental configurations as a 'series of Chinese boxes' (see also Thomas 1993, 43). This line of interpretation also underlies the idea of correspondence or rather that different monuments are somehow interchangeable with one another. Consequently, Aubrey Burl can identify that stone circles were probably the counterparts of henges in those highland areas where it was hard to dig ditches (Burl 2005, 10). Elsewhere, Burl considers that timber circles were the equivalent of stone circles in wood (Burl 1977, 32). Gibson is more prudent when he suggests that 'the link between stone and timber circles is at times contradictory' (Gibson 1998a, 24). Acknowledging the structural similarities between various types of Neolithic monuments, Bradley (1998a) draws out architectural variability in terms of agency, particularly the differential

experiences of people inhabiting passage graves, henge monuments and stone circles (see also Barrett 1994, 15–9; Richards 1993; Thomas 1992; 1993). Here we re-encounter the strategies of inclusion and exclusion as described to characterise the spatial organisation of Stonehenge (Whittle 1997a, 163).



Figure 16.2. View of the Maeshowe ditch as a container of water (image by Nick Card).

The concept and practice of wrapping

Accepting the apparent similarity of interpretative discourse concerning different Neolithic monuments, and the context of this volume, perhaps we should take note of Alasdair Whittle's plea for 'a more subtle vocabulary of construction and the differentiation of space' (Whittle 2006, 16). As a response, we argue that the concept of 'wrapping' is useful as a heuristic to provide a slightly more nuanced and richer appreciation of the differences and similarities of Neolithic monumental architecture, particularly passage graves (also see Richards 2013). Of course, the idea and practice of wrapping things is familiar to all of us. Just think of

festive gifts being wrapped on Christmas Eve, or fish and chips wrapped in paper at the seaside. In fact, a trip to the local shop will reveal just how obsessed we are with wrapping things today. However, the idea of wrapping is not restricted merely to gifts and presentation, but as a form of practice has been variously described as a 'stimulating analytical metaphor' by Ben-Ari (1990, 225), or constituting a structuring or ordering principle of society (Hendry 1993, 1; Moeran 1990, 2). A particularly salient issue raised by considering the process of wrapping things is that it stresses the critical importance of interfaces, skins and membranes in discourses of containment (e.g. Gell 1993, 23–31). In rethinking the architecture and form of passage graves, if, instead of conceiving different Neolithic monumental forms as architectural types, we introduce the notion of architecture as a function of wrapping, then Bradley's (1998a, 124–8) observations concerning practice and agency assume greater significance. Here also the possibility exists that the practices and methods of wrapping can, under certain circumstances, be of greater import than what is actually being wrapped (cf. Moeran 1990, 2). The elevation of surfaces as wrapping is something very familiar to us in the contemporary world:

The television celebrity is a vessel. An inoffensive container in which someone else's knowledge, insight, compassion, or wit can be presented. And we respond like the child on Christmas morning who ignores the gift to play with the wrapping paper (McGinniss 1988, 29).

The possibilities of wrapping are numerous but here we consider those suggested to be pertinent to Neolithic passage graves. First is the desire to conceal, and accompanying concealment, of course, is the possibility of disclosure and revelation. Another reason for wrapping is protection; for instance, we wrap food to protect it from contamination and prohibit the

absorption of germs from outside. Equally, wrapping for protection can function the other way, that is to say the danger may be internalised. For instance, the wrapping of a nuclear reactor with a lead shield is to protect those outside from something within. The process of wrapping can also affect new associations. Consider the wrapping together of fish and chips, two deliciously disparate components combined through wrapping. Another corollary of wrapping is, as the quote above suggests, that it allows things to be re-presented, even misrepresented.

Thinking about the materiality of wrapping is important for a number of reasons. First, the emphasis is on practice, the process of wrapping something with something. This leads directly to the possibility of unwrapping as a practice of disclosure and revelation. Second, when thinking about monuments, it places greater emphasis on the mode and manner (architecture) of wrapping; it is not merely something that separates or divides but constitutes a skin or membrane that is significant in its own form and materiality.

Skins or membranes can be paradoxical entities in that although physically containing and concealing, they also reveal and draw attention to that being concealed. Just envisage tight-fitting clothing. This form of wrapping can be best described as a mechanism of *indication* and function of *concealment* where that which is being indicated and highlighted is also necessarily hidden or obscured. Conversely, a function of concealment may be to subvert the mechanism of indication and directly lead to false assumptions as to what is actually being wrapped. Take for example, the passage grave mound. Because it is created as a function of the wrapping process, the assumption is that the mound (like the celebrity) contains something of great import. Silbury Hill in Wiltshire provides a good example of this subversion where the enormous mound was created by the sequential addition of material 'skins' (Leary 2010, 143–6; Leary *et al.* 2014; Whittle 1997b, 24–6). Indeed, Silbury Hill has been

suggested to have echoed and referenced the imagery of a 'passage grave' (Thomas 1999, 216; Whittle 1997b, 150). Unsurprisingly, the mound has been consistently assumed to contain something extraordinary at its centre (Field 2010, 6), hence the tunnels and trenches that have been dug into the mound over the years. A central feature now seems highly unlikely as the centre of the mound has been well examined (see Whittle 1997b, fig. 6).

A similar occurrence is found within the passage grave cemetery at Carrowkeel, Co Sligo, Ireland. Several of the cairns exhibiting the same outward appearance of passage graves were thoroughly investigated with the expectation that a passage and chamber existed within the kerbed mounds. However, in Cairns A and P no chamber or passage was found, indeed, the monuments appear to have been constructed around either outcropping rock or boulders (Sam Moore *pers. comm.*). Furthermore, at the Loughcrew passage grave cemetery, Co Meath, Cairn D was excavated but no indications of any form of chamber, passage or structure were found within this large cairn (Conwell 1866).

The mode of wrapping may also determine the manner of unwrapping and consequently structure the experience of that which is concealed. This is particularly evident when considering monumental architecture as a form of wrapping (e.g. Hendry 1993, 98–122). In an architectural context, the unwrapping process is based on practice, to move through various layers and skins, but in a sequential and controlled manner. Under such circumstances final revelation comes only after a sequence of physically structured experiences have been encountered and negotiated.

This brief discussion of wrapping has raised a range of possibilities concerning the nature of Neolithic monumentality in terms of architecture, materiality, and practice. Rather than considering all the different forms of monuments in a manner that prioritises inside–outside distinctions, a situation noted earlier, here attention will be placed on the generative qualities of the

skins that create the passage grave. Some thought will also be given to what is actually being wrapped on such a monumental scale.

Passage grave architecture and technologies of wrapping

In the introduction Maeshowe was characterised as essentially a monument constituted by technologies of wrapping. Furthermore, it was recognised that once Maeshowe was ‘wrapped’ the architecture of binding afforded no obvious route of access to the internal chamber, an extraordinary occurrence given the sophisticated masonry on display. What are we to make of a monument that is apparently built in a manner that highlights and celebrates different forms of binding and yet paradoxically prohibits any form of appreciation of what is actually being bound? Is this little more than an extension of the attention placed on the wrapping paper, as opposed to the gift? If this is the case then we must allow the possibility that the content or contents of the passage grave are of little consequence. Alternatively, the contents may be deemed so dangerous or ritually powerful or polluting that physical contact is prohibited.

In conceiving a monument as a product or outcome of complex material strategies of wrapping, the practices and process of constructing a passage grave take centre stage, as do the material constituents. As has been argued for stone circles (Richards 2013, 16–23), under such circumstances the notion of a completed final form is diminished, as is the role of construction being merely a process of facilitation. Here passage graves become on-going projects of wrapping where any division between making and using becomes completely blurred.

Guillaume Robin (2010) has discussed the remarkable internal mound structure and cairn architecture of passage graves throughout Ireland and Britain. He notes that often a whole series

of distinct layers have been identified forming the mound around the chamber and passage utilising a wide variety of materials. These include earth and stone but also sand, clay, turf, animal bone and shell (Robin 2010, 375–85). Apart from Orcadian passage graves, where these two elements appear to be separated, the mound or cairn is also frequently contained by a kerb, which in some cases incorporates decorated slabs. Occasionally, further concentric architecture is found beyond the kerb in the form of banks, ditches and later rings of stone or wood. For Robin, these layers are deployed to mark out specific thresholds within and outwith the monument, specifically for people entering these monuments and undergoing a process of transformation (see also Hensey 2015).

If we subvert this narrative slightly and think about passage grave architecture as a technology of binding or wrapping, then rather than the architecture emphasising thresholds, the thresholds themselves provide a necessary indication of the wrapping. In other words, to ‘unwrap’ a passage grave involves the negotiation of its material skins through traversing thresholds (see Moore 2016). What is interesting is that in some examples such as Newgrange, the negotiation of the skins or membranes is a visible function of the monument, as a number of skins are apparent in the passage through sequential architectural (or decorative) thresholds (see Robin 2010). Alternatively, for instance at Maeshowe, the concentric masonry skins are completely concealed by virtue of the passage construction that in this case was formed by long sandstone monoliths which served to homogenise space and created undifferentiated passage architecture.

The material and architectural wrapping that constitutes the ‘passage grave’ is frequently remarkable in its sequential complexity; the monument is bound time and time again. At Newgrange, the architecture manifest in the Site K passage grave reveals a fascinating history of wrapping (Fig. 16.3). Initially, a small passage grave with an outer stone kerb was erected with

orthostats forming the passage and chamber. The possibility of access is equivocal, but certainly a blocking stone (K1) was present at the entry point that left a 0.7m gap between its top and the passage lintel (O'Kelly *et al.* 1978, 276). An arc of boulders on the western side sitting on the lower turves of the mound caused confusion similar to that of Childe at Maeshowe: 'they do not appear to have had a structural function and they must have been covered by the completed mound' (O'Kelly *et al.* 1978, 278). The mound itself was enveloped by a stone boulder kerb. This in turn was wrapped by a penannular ditch, and the excavated material used to cap the mound, 'but whether or not its sole purpose was the obtaining of additional material for the mound is open to question' mused a confused excavator (O'Kelly *et al.* 1978, 278). At a later time the passage and mound were respectively lengthened and enlarged. Even though the passage was extended, the original blocking stone (K1) remained in place, and another blocking stone was positioned at the end of the passage that continued to prohibit entry.

Therefore, despite this lengthening, the passage was not functioning as a means of accessing the central chamber. Between the original blocking stone (K1) and the newly positioned outer blocking stone, the passage was filled with soil containing cremated bone, fragments of bone pins and so forth, which the excavator was convinced was deposited 'as a mixture and at one time' (O'Kelly *et al.* 1978, 281). The mound was enlarged with layers of turf of a different colour and texture to that of the primary mound and which were considered to have come from a different location. Around this mound a new kerb of orthostats were set in sockets. The wrapping process had not yet been completed however, and the ditch (which must have been completely buried) was re-cut through from the upper surface of the second mound. Newgrange Site K demonstrates an interestingly diverse sequence of wrapping or binding, the material constituents of which actually created the monument

itself. Of particular interest and confusion is the role of the ditch, and its re-cutting at a time when its position should have been concealed beneath the secondary mound. The possibility that the original ditch contained human unburnt bones was never considered, although the material from its re-cutting was assumed to have been thrown up onto the mound where fragments of unburnt human bone were found (O'Kelly *et al.* 1978, 283).

The massive passage grave at Newgrange, Co. Meath, was investigated between 1962–1975 by Michael O'Kelly (1982). The excavations revealed an extraordinarily sophisticated and curious sequence of construction. Accepting his conviction that the presence of a smaller 'turf mound' at the rear of the main mound represented an earlier passage grave (O'Kelly 1982, 92), it was quite clear that instead of being a homogeneous mass, or a combination of dumps of material, the main mound comprised a series of different layers. Each layer was distinctive and discrete: for example, there were layers of stone (cairn), thin layers of earth and also multiple layers of turf, up to 14 turves thick in places (and 42 layers thick behind the kerbstone K53). It is interesting that O'Kelly noted that the turves varied in colour which indicated that they were cut from different soils and/or vegetation, suggesting that each turf was a visually distinctive layer potentially brought in from a different area or with distinctive vegetation (O'Kelly 1982, 85). The turves were so well preserved in places that the excavator was able to confirm that they were laid vegetation-side up so that the monument would literally have been wrapped in particular types of plant. Although only exposed in some areas, at the base of the cairn encircling the central chamber were a series of circuits of small boulders. Newgrange clearly conforms to what Robin (2008, 160), in pondering 'what is a passage grave', described as a series of 'concentric envelopes'.

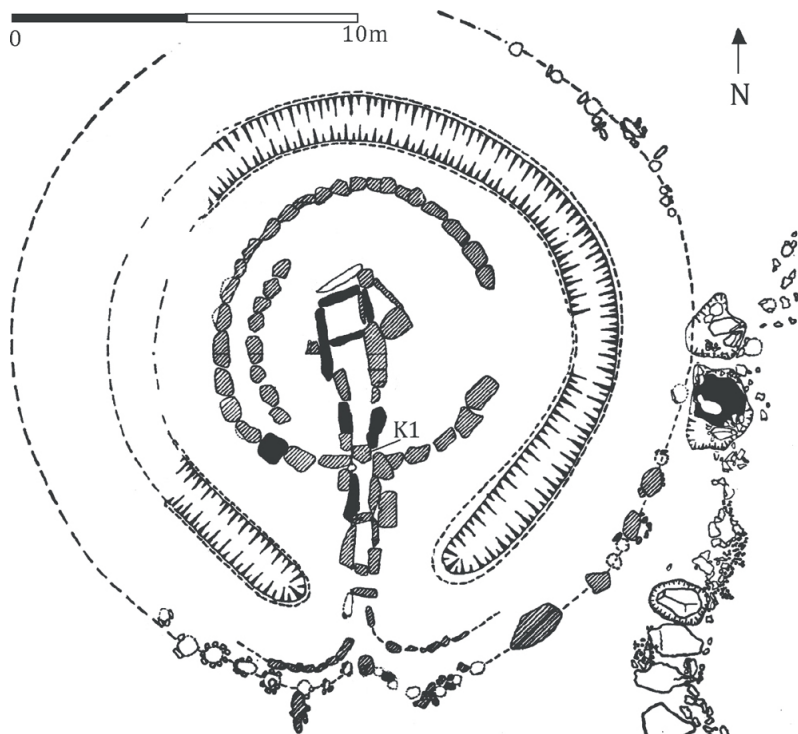


Figure 16.3. The passage grave at Newgrange Site K (after O'Kelly et al. 1978).

One of the most intriguing and revealing aspects of building and wrapping the Newgrange chamber was that the mound appeared to be constructed *prior* to the building of the passage. The excavator found that a space had been left by the builders, carefully covered with turf to prevent slippage, where the passage would eventually be constructed (O'Kelly 1982, 89). This is a curious constructional sequence and may hint at the possibility that it was the act of wrapping via the creation of the mound around a central chamber that was of crucial importance. The passage was clearly anticipated, but the wrapping of the main chamber (and its contents) could not be delayed but had to be bound immediately after construction. Clearly, if the passage was not erected until the mound was fully formed, and as the

formation process consisted of depositing different materials sequentially over a substantial period of time, the entire conception of Newgrange as a passage grave built as an accessible internalised place of burial and ritual becomes problematic (see also F. Lynch 1973, 148).

Facing the edge of Newgrange is a kerb of substantial stones, a number of which are of different lithologies, and many are beautifully decorated (Fig. 16.4). If we conceive the Newgrange mound as resulting from a process of sequential material wrapping, the status of the stone kerb as a primary feature of construction (O'Kelly 1982, 86–7; A. Lynch 2016, 65) is hard to sustain, not least as kerb stone K1 completely blocks the passage entrance (F. Lynch 1973, 148).



Figure 16.4. The Newgrange passage grave.

Further excavations carried out at the rear of Newgrange in 1984–5 revealed the kerbstones to be variably positioned, ranging from standing in packed sockets to lying wedged up on the ground surface (A. Lynch 2016, 35). The mound material was found to have run up to the kerbstones, and in places had flowed over them, seemingly supporting O'Kelly's (1982, 86–7) assumption of the primacy of the kerb as a form of demarcation and structural support. Accepting the 'construction' of Newgrange passage grave falls within the period c. 3200–3000 cal BC (Schulting 2016, 50), the radiocarbon date of 2869–2580 cal BC (UBA-23056, 95.4% probability) obtained from a cattle rib in the socket fill of kerbstone K71 is clearly too late. Although this date is dismissed

as being ‘presumably intrusive’ (Schulting 2016, 46), it is only problematic if the Newgrange kerb is accepted as being primary, as opposed to a later material wrapping of the monument. As Robin (2008, 160) acknowledges ‘it is important to regard the kerb mainly as an enclosure and not as a simple wall retaining the tumulus material’ a role also considered by Eriksen (2008). We will go further and suggest that the decorated kerb should be conceived as an outer skin with the ‘art’ acting as a second skin, akin to the tattooed body (cf. Gell 1993).

The creation of a monument through processes of wrapping is also a feature of the main mound at Knowth. Here, even clearer evidence for the sequential deposition of different material is evident (A. Lynch 2016, 65). Eogan (1984, 44–5) details a complex sequence where, over a basal deposit of turves, layers of loose stone, including quarried stone, shale and water-rounded boulders were interleaved by layers of turf and clay. As with Newgrange the outer skin of the mound was composed of partially decorated kerbstones. Also encircling the main mound at Knowth are a series of smaller passage graves, themselves another layer through which people needed to pass to reach the central monument (Figs 16.5 and 16.6).

In Britain, passage grave architecture is equally complicated and the monuments yet again display material sequences that can be identified as technologies of wrapping. Ever since Bryn Celli Ddu was excavated in 1928–9 by Wilfred James Hemp (1930), much debate has ensued about the monument sequence. In short, the presence of a bank and ditch led Claire O’Kelly to suggest that instead of starting life as a passage grave, Bryn Celli Ddu was in fact a henge monument which later saw a passage grave constructed over it (O’Kelly 1969). Conversely, Eogan (1983), Bradley (1998b, 8–10) and Burrow (2010), with slight variation, argued that the site began life as a small passage grave surrounded by arcs of stone and a bank and ditch and was subsequently expanded into a large mound with an outer kerb. A closer

examination of the site reveals an architectural sequence that can be paralleled with some of those passage graves discussed above. The chamber and probably only a portion of passage were constructed first along with a supporting mound and an inner arc of stones. The encircling bank and ditch may have been contemporary, or added later. As with Maeshowe, the ditch had no causeways prohibiting access to the monument, and Burrow, after Lynch, has suggested that the chamber may well have been sealed off at an early stage in its history (Burrow 2010, 264). Most of the mound and cairn had unfortunately been removed prior to Hemp's investigations, but antiquarian explorations hint at the possibility that the mound was also composed of a number of different layers and materials:

I found several limpet shells and v. old looking fellows ... after removing about a foot in depth of yellow soil I came to a few flat slabs of stone ... and immediately underneath these slabs is a thick bed of small shingle (Lukis, quoted in Hemp 1930, 181).

At a later date, yet more layers were added to the monument, expanding the mound until it reached a newly constructed outer kerb; the passage was extended to accompany this expansion (Fig. 16.7). However, there is something curious about the enlargement of the passage grave, particularly the situation of the kerb, which was actually set in the ditch. Consequently, it would not have served as an effective outer structural support for the mound, nor would it have been particularly visible. Thinking about the Bryn Celli Ddu kerb in structural terms creates the same bewilderment as that voiced by Kilbride Jones at Maeshowe, or O'Kelly at Newgrange Site K, and we suggest that the kerb was nothing other than an outer membrane, and that its significance lies in the practices of construction and its presence and role as an impervious external wrapping.



Figure 16.5. The smaller passage graves at Knowth surrounding the main mound (left).

Hopefully, these examples have demonstrated that passage graves, specifically the mounds, are nothing more than technologies of wrapping, frequently comprising multiple layers of a wide variety of different materials, including earth, stone, clay, sand, bone and turf. Wrappings also extended beyond the mound, taking the form of ditches filled with water and banks, walls and wooden stakes. It is not that these sites are wrapped, but the wrapping constitutes the sites. Once again, the question is raised concerning what was deemed so important to wrap in such an extravagant and visual manner. Furthermore, was there any consistency in what was required to be wrapped?

At the heart of the passage grave

Despite the plea by Daniel and Powell (1949, 169) that the term ‘passage grave’ should be an exact taxonomic, as opposed to a description, the incorporation of this class of monument within chambered tomb typologies has ensured their interpretation as accessible places for the repeated deposition of human remains (e.g. Renfrew 1973; 1979, 218–9). Apart from anomalies such as

Quanterness, Orkney, the presence of large quantities of human bone is not a prominent feature of passage graves. Yes, small quantities of human bone, often cremated, are deposited within chambers and passages, but this can only be described as a low-key presence. Actually, the outstanding feature of the passage grave chamber is the extraordinary architecture and architectural elements. If we move away from the idea that the presence of passages enabled continual access and the deposition of human remains over prolonged periods of time, and consider instead the implications of such elaborately wrapped or contained places, a very different narrative ensues.

Although the presence of large stone basins within the recesses of the chamber at Newgrange had been known since Edward Lhwyd recorded them in 1709 (O'Kelly 1982, 24), we can only imagine the excitement when Eogan and his team entered the eastern chamber and laid eyes on the beautifully carved stone bowl in the northern recess of Knowth (Eogan 1984). After the initial discovery it soon was realised that the stone basin is so large that it could only have been put in place prior to the construction of the chamber and the monument itself. Indeed, this is an argument that can be extended to encapsulate the stone basins in general. A total of 25 stone basins have been recorded within passage graves, and many more may await discovery in monuments which have not been investigated (Hensey 2015, 104). In some cases, stone basins have been found to contain the remains of the dead, usually cremations, which also occur on the floor beneath basins at Site L, Loughcrew (Hensey 2015, 108), Newgrange Site Z (O'Kelly *et al.* 1978, 292) and at Newgrange (O'Kelly 1982). It is worth considering that it is not only cremated human bone which was present, but also unburnt human bone, such as the remains found within the central chamber at Newgrange (Stout and Stout 2008).

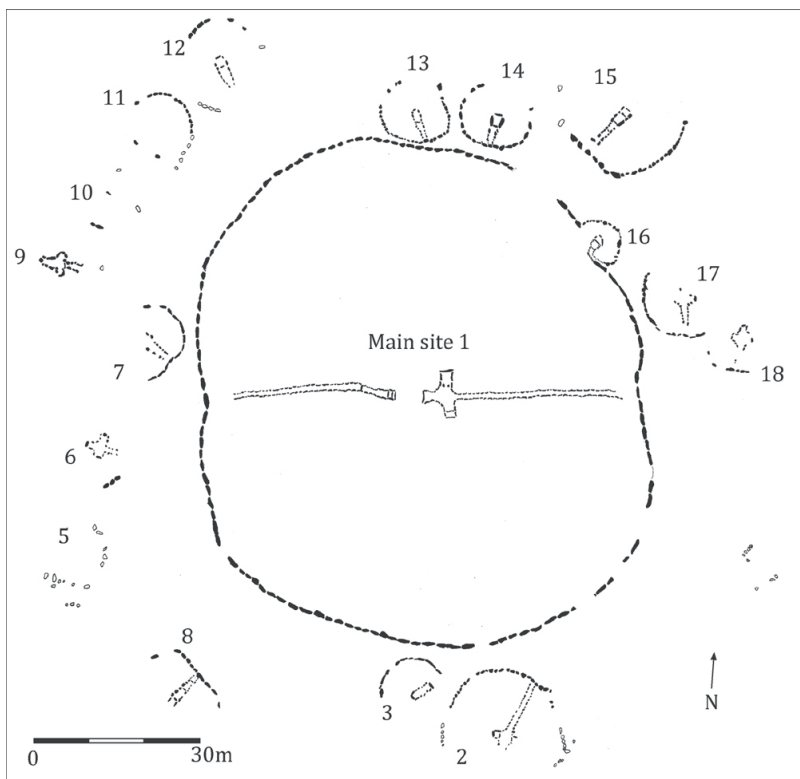


Figure 16.6. The central passage grave at Knowth is surrounded by earlier passage graves (after Herity 1974).

A question arises as to the status of these quite different material residues of human bone. For example, were unburnt human skeletal material and fragmented cremated bone considered as equivalents despite their visual distinction and the divergence in mortuary practices leading to their final morphology? Moreover, was their deposition within the chamber actually appreciated as a continuation of the construction process of the monument or as a separate act of burial, and did that vacillate between cremated and unburnt human remains?

The deposition of cremated bone in specific locations within the passage grave includes an interesting association with orthostats. When Graham Ritchie (1975) dismantled the stone

circle at Balbirnie, Fife, he discovered cremated bone in the stone sockets. Similar deposits were recovered from Bryn Celli Ddu (Hemp 1930), Site L at Newgrange (O'Kelly *et al.* 1978) and the Mound of the Hostages (O'Sullivan 2005). At the latter two sites, cremated remains were present in stone sockets of the chamber and passage. From the account of Newgrange passage grave Site L by Frances Lynch, the form of deposition at these sites appears remarkably similar:

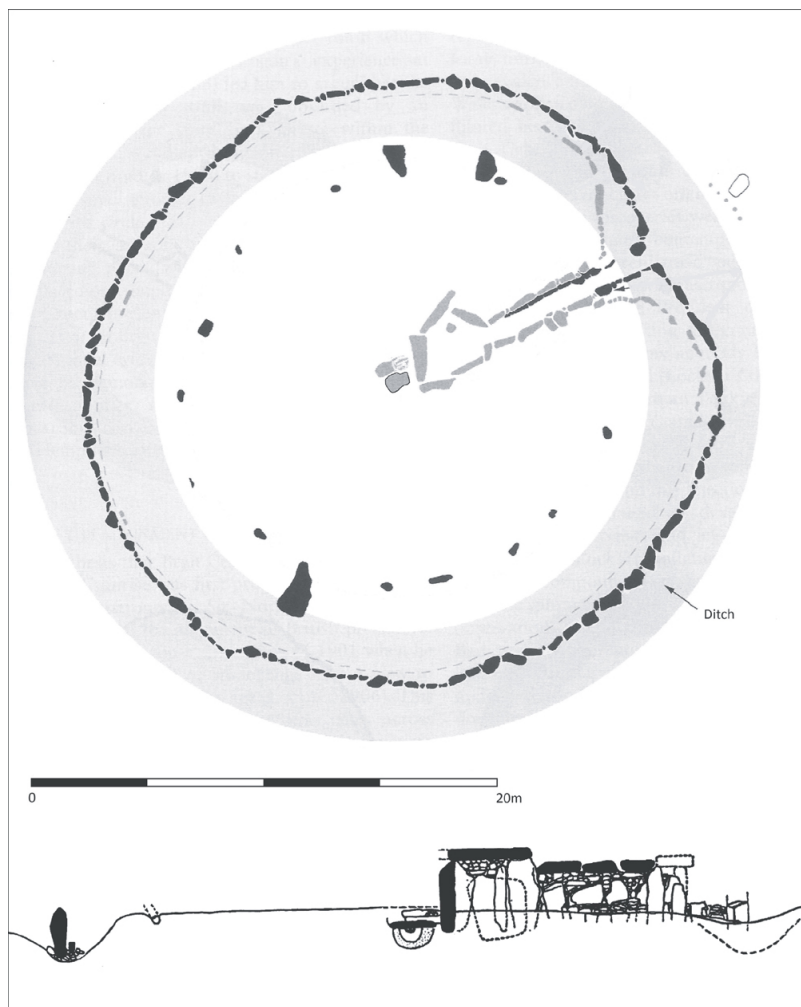


Figure 16.7. Plan and section of Bryn Celli Ddu, in particular showing

the unusual location of the kerb sitting within the ditch (after Burrow 2010; O'Kelly 1969).

The other orthostats [of the main chamber] had been set up and secured in the same way. Small extensions to some stone holes may have held wooden props used in the erection of the stones, though the presence of bone in them may possibly invalidate this view (O'Kelly *et al.* 1978, 260).

Clearly, cremated human bone was incorporated into the stone sockets at Newgrange Site L as the central chamber was being erected:

It could be argued that the main burial deposit was made at a single time, and that the bones had not been carefully cleaned.... that they had been spread all over the floor and trampled on by those sprinkling them with a final covering of earth; but some burials must have been made before the main group, as there were small pockets of burnt bone in extensions to two stoneholes in the end chamber. These bones must have been placed in the hole in front of the end stone while it was being set up for they are covered by the clay capping above the packing stones (O'Kelly *et al.* 1978, 261).

This account mirrors the evidence from the Mound of the Hostages, where similar slots were evident in the stone sockets (Scarre 2013). Clearly, the deposition of cremated remains not only pre-dated the 'completed' monument (Whittle *et al.* 2011, 654), but actually constituted an important part of the act of passage grave construction. Overall, such depositional strategies which fuse cremated human remains with upright stones can be understood as animating practices.

Curiously, apart from the orthostats employed to construct the passage and central chamber of the passage grave, there are

several examples of individual free-standing monoliths being present within the central chamber. For example, in Cairn L at Loughcrew, Co. Meath, there is a standing stone of blue limestone and Cairn F at Carrowkeel, Co. Sligo, also has a central pillar-stone (Cooney 2000, 132). Elsewhere, the large shaped 'pillar-stone' in the chamber at Bryn Celli Ddu, Anglesey ([Fig. 16.8](#)), must have been primary to construction, and its presence as a free-standing monolith gives the impression that the entire monument was built as an architecture of encasement around it.

Returning to Orkney, perhaps Maeshowe is the best example of this phenomenon. Within its confines, facing each corner of the chamber recesses is a typical Orcadian angle-topped standing stone. Originally identified as buttresses (e.g. Henshall 1985, 98), in actuality the presence of the monoliths provides instability to the corbelled structure. The stone-sockets of each monolith underlie the side wall of the central chamber, therefore their erection represents a primary element of construction. Consequently, at an early stage during the building of Maeshowe, four standing stones would have stood proud on the platform. If these monoliths were superfluous to construction, but their presence deemed essential to the monument, the possibility exists that the dramatic height of the central chamber is merely to facilitate the inclusion and containment of the standing stones. As an extension of this line of reasoning, it could be argued that the very practice of setting a stone in a vertical position introduces an equation with the erect human body; as Robb muses 'human bodies can be represented in a staggering variety of ways' (Robb 2009, 180). Perhaps a different way of thinking about standing stones encased in passage graves is as relational categories pertaining to material flows and transformations of the person. With particular reference to the Stenness-Brodgar monumental complex in Orkney that includes two large stone circles and numerous standing stones, of which Maeshowe forms part, what is so interesting is why these specific monoliths were selected to be

encased and wrapped within the extraordinary architecture of the passage grave.

The passage grave at Quanterness, Orkney, is famous for the large number of burials as represented by a mass of disarticulated human bone within the chamber and side cells (see Crozier *et al.* 2016; Renfrew 1979). However, this deposit was not the primary feature of the main chamber. Two stone cists (B and D) and an oval slab-covered pit (C) had been cut into the natural till through a thin spread of burnt material (Renfrew 1979, 58–60). Each excavated cist revealed evidence for single articulated crouched inhumations. Consequently, stratigraphically the earliest burial deposits were inhumations in cists cut into the floor and covered by large flagstones. It was these three burial cists that the passage grave wrapped (Fig. 16.9)



Figure 16.8. The large standing stone in the chamber at Bryn Celli Ddu.



Figure 16.9. Burial cist B, cut into the glacial clay, was one of the primary features within the passage grave of Quanterness (reproduced by kind permission of Colin Renfrew).

From the above observations an impression is gained of the passage grave constituting a technology of wrapping. Equally, what is being wrapped seems extremely variable. Perhaps a common theme may be some form of animation. As an extension to this discussion there also exists the possibility of a significant 'place' being encased within the passage grave. For instance, the hearth feature at Barclodiad y Gawres can also best be understood as a pre-cairn feature around which the monument was subsequently erected. This feature consisted of a thick layer of charcoal on top of which were limpet and oyster shells, which

themselves were covered by a layer of flat stones and smooth quartzite pebbles. A deposit containing fish bones, amphibians, reptiles and possibly small mammals was then poured over this (Powell and Daniel 1956, 17).

This could be expanded to encompass other sites. In terms of sequence, most authors (e.g. Cooney 2000; Hensey 2015) agree that the large passage graves found at the centre of the large complexes such as Bru na Boinne and Loughcrew were secondary to the smaller passage graves found around their perimeter. This means that, for the later and larger passage graves at least, it was an open central space which was wrapped by a ring of smaller passage graves. It was only later on that the large passage graves were built over that central space. On account of the fact that enormous structures now exist, it is hard to decipher precisely what took place in these spaces prior to the monument being built, but it seems possible at least that they were the focus of activity or significance.

Conclusion: wrapping up passage graves

In this reconsideration of passage graves we have suggested that current interpretations of these sites are predicated on the idea that the builders were aiming to construct a monument which, once built, could be used for burial and mortuary ritual. However, the excavators of these sites have been consistently confounded and confused by blocked passages, ditches (sometimes with no entrances) and endless and disparate concentric architecture which seemed superfluous to the structural requirements of building a mound to encase a 'burial' chamber. Although beyond the confines of this chapter, much has also been written over the years about the art found within these monuments. Again causing confusion, substantial amounts of this decoration are hidden or, in some cases, face inwards (Hensey 2015; Robin 2010).

Here we have taken an approach which argues that it was the

process of building which was in and of itself a function of the site. Technologies of wrapping were played out time and time again to create passage graves from Orkney through to Ireland. How, then, should we understand this wrapping process? As outlined above, in some cases it may have been specific things that were being wrapped. However, there is no single consistent feature found prior to the construction of passage graves: in some cases there are single standing stones or basins with associated cremation deposits, or in the case of Quanterness discrete burial cists. Containing and controlling the very real dangers associated with animating practices may have been the consistent function of passage graves. Equally, the chamber may simply have been an area set aside for contacting other worlds (e.g. Moore 2016; Robin 2008), for dealing with the dead or conducting sorcery or witchcraft. In this way, the process of wrapping may have offered special protection from these dangerous forces. It should be noted that these interpretations do not preclude a continued use of the chamber, despite the ambiguous role of the passage at many of these sites. Material could still be added, perhaps via the roof, as seems to have been the case with many chambered tombs. It is also possible that in some cases passages did not function as access points to the chamber.

While technologies of wrapping can conceal and protect, they can also act to unify. It is quite clear that with the large Irish passage graves material was brought in from a whole variety of different locations (Cooney 2000; Stout and Stout 2008, 7–11), with distinctive materials used as layers of wrapping within, and beyond, the mound. Here the importance of the materiality of wrapping is highlighted and the ability to combine different elements and substances within the dermatology of the mound. Technologies of wrapping are deployed in the social practices of construction, including the physical endeavour of bringing disparate materials and substances together. Much has been written on the need to move away from thinking about monument

architecture as the materialisation of a typological construct (Richards 2013, 13–6) or mental ‘blueprint’ (e.g. Field 2010, 8). Instead, monuments could be said to progress as ‘planned’ projects through a variety and sequence of material engagements (see Yarrow and Jones 2014). However, as Ingold declares ‘the mound is never complete. One can always carry on adding new material’ (Ingold 2010, 254). Perhaps this is a better way of encapsulating the architectural logic and progression of the British and Irish passage graves. In being the result of technologies of wrapping, passage grave mounds do not represent ‘closure’ as such (cf. Last 2007), but we suggest are best viewed as projects of containment projecting into the future. The final form of the passage grave is unknown. Just as its skins may blur and take many forms, however, with each episode of wrapping the monument is reproduced. More generally, acts of wrapping may well have been seen as having cumulative efficacy, and as forms of practice they were increasingly deployed across most of Britain and Ireland in the construction of other monuments, such as henge monuments and stone circles.

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Rings of fire and Grooved Ware settlement at West Kennet, Wiltshire

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Introduction

Alasdair Whittle has had a career-long interest in the Neolithic of the Avebury area ([Fig. 17.1](#)). In the late 1980s and early 1990s he undertook a major research project in the region to investigate the Neolithic sequence and its environment (Whittle 1993). This included a series of excavations of early Neolithic sites including the causewayed enclosure at Windmill Hill (Whittle *et al.* 1999), the chambered tomb at Millbarrow (Whittle 1994), and an earthen long barrow at Easton Down (Whittle *et al.* 1993). A series of trenches were also cut through two palisade enclosures at West Kennet (Whittle 1997). This campaign of new excavation was

accompanied by research into the archives of previous investigations, particularly the publication and subsequent dating of Richard Atkinson's excavation on and within Silbury Hill in 1968–70 (Bayliss *et al.* 2007a; Whittle 1997) and a reassessment of the date and development of Avebury itself (Pitts and Whittle 1992).

The subsequent decades have seen continued work in the Avebury region, given focus by the Archaeological Research Agenda for the Avebury World Heritage site (AAHRG 2001). Alasdair himself has been instrumental in producing refined chronologies for the West Kennet long barrow (Bayliss *et al.* 2007b) and the causewayed enclosures at Windmill Hill and Knap Hill (Whittle *et al.* 2011, chapter 3), and in producing synthetic narratives of early Neolithic sites in the region and beyond (Whittle *et al.* 2007; 2011, chapters 14 and 15). Further understanding of the late Neolithic landscape has been gained through research excavations at the Beckhampton Avenue and Longstones Cove and ditched enclosure (Gillings *et al.* 2008), and through rescue excavations undertaken in advance of consolidation works at Silbury Hill (Leary *et al.* 2013a).



Figure 17.1. Alasdair Whittle (back to camera!) directing excavations at Windmill Hill in 1988.

The latter in particular has done much to improve our understanding of the development and date of Silbury Hill (Marshall *et al.* 2013; in prep. a; in prep. b), which has been put into context by a recent synthesis of the available scientific dating

evidence for the Avebury area by Frances Healy (2016).

Objectives

The survival of late Neolithic monuments such as Stonehenge, Avebury and Silbury Hill in this part of Wiltshire is one of the key reasons for the World Heritage status of this area. There is an emerging narrative for the development of these sites (Darvill *et al.* 2012; Leary *et al.* 2013b; Marshall *et al.* 2013; a), and so the relatively poor chronology of the West Kennet palisade enclosures increasingly stands out as a lacuna in our understanding.

Alasdair was acutely aware of the need for precise dating to provide a specific context for each monument. Based on a series of 12 radiocarbon dates on animal bone and antler from the two palisade enclosures and on the associated assemblage of Grooved Ware, however, he was only able to suggest ‘a broad range, somewhat at odds with the event-like character of the constructions, of 2600/2500–2200/2100 BC’ (Whittle 1997, 139).

The aim of this research was to address this imprecision by producing a more precise and robust chronology for the West Kennet palisade enclosures. This would enable us to unravel the temporal relationships between the enclosures themselves and their associated features, and to place them within the monumental timescape of Avebury and the wider World Heritage site (e.g. Silbury Hill, Avebury, Stonehenge, Durrington Walls etc.). On a wider scale, palisade enclosures are monuments of a type which bear comparison across the British Isles.

Sampling

The new radiocarbon dating programme for the West Kennet enclosures was conceived from the start within the framework of Bayesian chronological modelling (Bayliss *et al.* 2007c; Buck *et al.* 1996). This allows the combination of calibrated radiocarbon

dates with archaeological prior information using a formal statistical methodology. The project followed the reflexive approach to implementing Bayesian chronological modelling in archaeology that has been developed by English Heritage over the past twenty years (Bayliss 2009, fig. 9). The sampling strategy was thus devised using a series of simulation models which combined the available archaeological information (in this case the spatial relationships between features, and rarely vertical stratigraphy) with simulated radiocarbon dates from the available pool of potential suitable datable samples and the existing radiocarbon dates. These simulations were informed by the expected mid-third millennium cal BC date of the enclosures.

Samples were selected to try to target a range of features within the monument complex. The archaeological prior information was gathered from the site publication (Whittle 1997), supplemented by more detailed information from the excavation notebooks held in the site archive at the Alexander Keiller Museum, Avebury. This ensured that the selected samples came from well-recorded contexts.

Following an assessment of the surviving archive in the Alexander Keiller Museum, Avebury, it was decided to submit articulating animal bone and antler samples for dating. This is because the taphonomy of the charred plant macrofossils in the archive was regarded as less certain. Articulating bones were probably incorporated into the deposit from which they were recovered whilst still fleshed, and therefore there should be no significant time interval between the date of the context and the date of the death of the animal concerned. Where possible, the same zones of same-sided skeletal elements were selected for dating from a context to ensure that measurements were produced on different individuals. Antler samples were also selected from various features, on the basis that these would provide an estimate for the timing of digging activities associated with aspects of monument construction.

These results on the bone and antler samples seemed to confirm the third millennium dating of the enclosures, but in the interim we discovered that the charcoal samples from the burnt posts of the enclosures survived in the British Museum. Since this material must directly date the construction of the enclosures, a further suite of samples was submitted to assess the difference between the date of construction and the date of last use (as estimated from the associated animal bone samples).

Following the unexpected results produced by the charcoal samples from the enclosures, we searched for sapwood amongst the oak charcoal from the post-pipes of structures 1–3. Unfortunately, insufficient suitable material could be identified for radiocarbon dating to be undertaken directly on the posts of these structures.

Radiocarbon dating

Twelve radiocarbon dates were obtained as part of the original post-excavation programme (Whittle 1997, table 1). Two antler fragments from the outer ditch of enclosure 1 were dated by liquid scintillation spectrometry at the British Museum using methods described by Ambers *et al.* (1991). The remaining ten samples were dated by gas proportional counting of methane at Cardiff University (Dresser 1985). All consisted of animal bone, although unfortunately there appears to be no exact record of which bones were dated. From the published sample descriptions, however, it is apparent that most probably consisted of a number of bones – either because the sample consisted of mixed species (e.g. CAR-1297), or because it was from more than one post-pipe (e.g. CAR-1291), or because it consisted of pig bone (few of which would be large enough for conventional dating on their own, e.g. CAR-1289). One further antler was submitted for dating to the British Museum but failed to produce sufficient collagen for analysis.

Table 17.1. West Kennet palisade enclosures – radiocarbon and stable isotope measurements.1

Laboratory Number	Sample Number	Material and context	Radiocarbon age (BP)	$\delta^{13}\text{C}$ (‰)	$\delta^{15}\text{N}$ (‰)	C:N
Palisade enclosure 1						
Outer ditch — trench G						
UBA-31101	Context [101] sample A	Charcoal, <i>Quercus</i> sp. sapwood (single fragment; C. Cartwright) from a postpipe row [101] seen intermittently through fill [111]	4419±37	-27.0±0.22		
SUERC-65177	Context [101] sample B	Charcoal, <i>Quercus</i> sp. sapwood (single fragment; C. Cartwright) from same context as UBA-31101	4535±28	-26.7±0.2		
SUERC-58623	Context [111] find <1038> sample A	Antler tine, probable pick (R. Madgwick) from [111] (Whittle 1997, 12, 62–3, fig. 29), the fill of enclosure 1 outer ditch [100] in trench G	3972±32	-22.8±0.2	4.5±0.3	3.2
UBA-22618	Context [111] find <1038> sample B 1038	Replicate of SUERC-58623	3843±34	-22.8±0.22	4.3±0.15	3.2
CAR-1293		T'=7.6; T'(5%)=3.8; v=1	3912±24			
		Animal bone, bulked pig and cattle bone from the edge of postpipe [123] (Whittle 1997, 12, 63), enclosure 1 outer ditch [100] in trench G	3960±70			
Outer ditch — trench H						
UBA-31102	Context [207] sample A	Charcoal, <i>Quercus</i> sp. sapwood (single fragment; C. Cartwright) from postpipe (207), one of the central line with 217, 218, 209, 219 and 220 visible in the enclosure 1 outer ditch [200]	4511±38	-26.2±0.22		
SUERC-65178	Context [207] sample B	Charcoal, <i>Quercus</i> sp. sapwood (single fragment; C. Cartwright) from same context as UBA-31102	4559±28	-25.9±0.2		
UBA-31103	Context [218] sample A	Charcoal, <i>Quercus</i> sp. sapwood (single fragment; C. Cartwright) from postpipe (218), one of the central line with 207, 217, 209, 219 and 220 visible in the enclosure 1 outer ditch [200]	2901±38	-22.7±0.22		
SUERC-65352	Context [218] sample B	Charcoal, <i>Quercus</i> sp. sapwood (single fragment; C. Cartwright) from the same context as UBA-31103	4511±29	-24.5±0.2		
UBA-31104	Context [219] sample A	Charcoal, <i>Quercus</i> sp. sapwood (single fragment; C. Cartwright) from postpipe (219), one of the central line with 207, 217, 209, 218 and 220 visible in the enclosure 1 outer ditch [200]	2958±55	-25.7±0.22		
SUERC-65179	Context [219] sample B	Charcoal, <i>Quercus</i> sp. sapwood (single fragment; C. Cartwright) from same context as UBA-31104	2966±28	-22.2±0.2		
SUERC-58627	Context [208] find <2019>	Animal bone, pig right femur with refitting unfused distal epiphysis (R. Madgwick) from [208] (Whittle 1997, 12, 63), later redefined as context [217–218], fill around postpipes [217–218] in enclosure 1 outer ditch [200] in trench H	3820±32	-21.5±0.2	6.6±0.3	3.3
CAR-1289		Animal bone, pig from around postpipes F217–F219 (Whittle 1997, 12, 63, fig. 30) in enclosure 1 outer ditch [200] in trench H	3860±70			

CAR-1290		Animal bone, pig from around postpipes F219–F220 (Whittle 1997, 12, 63, fig. 30) in enclosure 1 outer ditch [200] in trench H	3900±70			
UBA-22630	Context [210] find <2422>	Animal bone, pig right femur with refitting unfused distal epiphysis (R. Madgwick) from [210] (Whittle 1997, 12, 63, fig. 30), later redefined as [219–220], fill around postpipes [219–220] in enclosure 1 outer ditch [200] in trench H	3842±38	–23.8±0.22	4.2±0.15	3.1
Outer ditch — trench D						
BM-2602	Find <262>	Red deer antler beam fragment from the fill of postpipe F40, enclosure 1, outer ditch [F26] (Whittle 1997, 12, 62, fig. 30) in trench D	3620±50	–20.7		
BM-2597	Find <322>	Red deer antler crown fragment from the inner edge of layer 2, deliberate rammed chalk backfill in upper part of outer ditch [F26] of enclosure 1 (Whittle 1997, 12, 62, fig. 30) in trench D	3810±50	–20.8		
Outer ditch — trench C						
	Find <462>	Antler beam fragment (No. 462) beneath postpipe F50 in chalk rubble fill of outer ditch F19 (Whittle 1997, 61).	Failed			
Outer ditch — trench E						
UBA-31111	F23 sample A	Charcoal, <i>Quercus</i> sp. sapwood (single fragment; C. Cartwright) from palisade line (F23) visible in the fill of the outer ditch of enclosure 1 (F12)	4488±35	–26.5±0.22		
SUERC-65189	F23 sample B	Charcoal, <i>Quercus</i> sp. sapwood (single fragment; C. Cartwright) from the same feature as UBA-31111	4614±29	–26.8±0.2		
Inner ditch — trench F						
UBA-31112	F31 sample A	Charcoal, <i>Quercus</i> sp. sapwood (single fragment; C. Cartwright) from the postpipe row (F31) that consisted of three substantial postpipes (F34–F36) cut into the fill of the inner ditch (F21)	4512±38	–26.2±0.22		
SUERC-65190	F31 sample B	Charcoal, <i>Quercus</i> sp. sapwood (single fragment; C. Cartwright) from same feature as UBA-31112	4590±28	–22.9±0.2		
Midden/?house — trench H						
SUERC-58630	Context [222] find <2393>	Antler tine fragments, probable pick (R. Madgwick) from [222] (same as [238]) (Whittle 1997, 71, 76, fig. 43), chalk layer associated with feature between inner and outer ditches of enclosure 1 in trench H	3877±32	–22.7±0.2	5.2±0.3	3.3
UBA-22627	Context [222] find <2359>	Animal bone, pig lumbar vertebrae with refitting unfused cranial plate (R. Madgwick) from same context as SUERC-58630	3810±40	–20.8±0.22	5.7±0.15	3.2

UBA-22628	Context [223] find <2389>	Animal bone, pig right femur with refitting unfused proximal epiphysis (R. Madgwick) from [223], dark flinty layer, about 50mm thick (Whittle 1997, 76) above [222/238] and below [215], from feature in between the inner and outer ditches of enclosure 1 in trench H extension	Failed: no collagen			
SUERC-58628	Context [215] find <2322>	Animal bone, pig right femur with refitting unfused distal epiphysis (R. Madgwick) from [215] mass of animal bone, mainly pig, in dark matrix with Grooved Ware, overlying dark flinty layer which in turn overlay a concave area of otherwise flat laid chalk [238] (Whittle 1997, 12, 76, fig. 43) from feature between the inner and outer ditches of enclosure 1 in trench H	3889±32	-21.0±0.2	6.0±0.3	3.3
SUERC-58629	Context [215] find <2325>	Animal bone, pig right femur with refitting unfused distal epiphysis (R. Madgwick) from same context as SUERC-58628	3902±32	-21.2±0.2	5.6±0.3	3.2
CAR-1296		Animal bone, cattle bone from same context as SUERC-58628	3590±70			
CAR-1297		Animal bone, pig and red deer bone from same context as SUERC-58628	3550±70			
UBA-22629	Context [215] find <2301>	Animal bone, pig right femur with refitting unfused distal epiphysis (R. Madgwick) from same context as SUERC-58628	3581±37	-22.0±0.22	5.4±0.15	3.4
Inner ditch — trench J						
UBA-31105	Context [310] sample A	Charcoal, <i>Quercus</i> sp. sapwood (single fragment; C. Cartwright) from postpipe (310), part of postpipe row (309) along with (311–315 and 364) in the fill of enclosure 1 inner ditch [301]	4524±38	-24.5±0.22		
SUERC-65180	Context [310] sample B	Charcoal, <i>Quercus</i> sp. sapwood (single fragment; C. Cartwright) from same context as UBA-31105	4524±30	-25.4±0.2		
UBA-31106	Context [313] sample A	Charcoal, <i>Quercus</i> sp. sapwood (single fragment; C. Cartwright) from postpipe (313), part of postpipe row (309) along with (310–312, 314–315 and 364) in the fill of enclosure 1 inner ditch [301]	4427±50	-25.5±0.22		
SUERC-65184	Context [313] sample B	Charcoal, <i>Quercus</i> sp. sapwood (single fragment; C. Cartwright) from same context as UBA-31106	4698±31	-24.4±0.2		
CAR-1291		Animal bone, pig bone from postpipes [311] and [313–315], in enclosure 1 inner ditch [301] (Whittle 1997, 12, 66, figs 30, 33) in trench J	3890±70			
SUERC-58631	Context [325] find <3089> sample A	Antler tine, probable pick (R. Madgwick) from [325], fill of enclosure 1 inner ditch [301] in trench J	3926±32	-21.1±0.2	4.3±0.3	3.3

UBA-22622	Context [325] find <3089> sample B	Replicate of SUERC-58631	3870±34	-21.2±0.22	5.7±0.15	3.2
	Context [325] find <3089>	T'=1.4; T'(5%)=3.8; v=1	3900±24			

Palisade enclosure 2

Ditch — trench M

GU36829	Context [604] find <6067>	Animal bone, pig left femur with refitting unfused distal epiphysis (R. Madgwick) from [604] (Whittle 1997, 81, fig. 44), a dark layer in the uppermost fill of enclosure 2 ditch [630] in trench M	Failed: insufficient carbon			
UBA-22626	Context [605] find <6101>	Animal bone, pig left femur with refitting unfused proximal epiphysis (R. Madgwick) from [605] (Whittle 1997, 81, fig. 44), a dark layer in the uppermost fill of enclosure 2 ditch [630] in trench M	3948±36	-20.4±0.22	7.6±0.15	3.2
UBA-31107	Context [608] sample A	Charcoal, <i>Quercus</i> sp. sapwood (single fragment; C. Cartwright) from [608], the postpipe core of postpipe [625], in a row of four substantial postpipes [626–628] within the backfill of enclosure 2 ditch [630]. These represent former posts, which had been let into shallow, slightly irregular sockets up to 0.2m deep and no more than 0.5m across	4427±36	-25.6±0.22		
SUERC-65185	Context [608] sample B	Charcoal, <i>Quercus</i> sp. sapwood (single fragment; C. Cartwright) from the same context as UBA-31107	4580±28	-24.2±0.2		
UBA-31108	Context [609] sample A	Charcoal, <i>Quercus</i> sp. sapwood (single fragment; C. Cartwright) from [609], the postpipe core of postpipe [626], in a row of four substantial postpipes [625, 627–628] within the backfill of enclosure 2 ditch [630]. These represent former posts, which had been let into shallow, slightly irregular sockets up to 0.2m deep and no more than 0.5m across	4449±36	-25.5±0.22		
SUERC-65186	Context [609] sample B	Charcoal, <i>Quercus</i> sp. sapwood (single fragment; C. Cartwright) from the same context as UBA-31108	4771±31	-25.2±0.2		
UBA-31109	Context [610] sample A	Charcoal, <i>Quercus</i> sp. sapwood (single fragment; C. Cartwright) from [610], the postpipe core of postpipe [627], in a row of four substantial postpipes [625–626, and 628] within the backfill of enclosure 2 ditch [630]. These represent former posts, which had been let into shallow, slightly irregular sockets up to 0.2m deep and no more than 0.5m across	4514±35	-24.5±0.22		
SUERC-65187	Context [610] sample B	Charcoal, <i>Quercus</i> sp. sapwood (single fragment; C. Cartwright) from same context as UBA-31109	4583±28	-24.8±0.2		

SUERC-58632	Context [610] find <6195>	Animal bone, pig right femur with refitting unfused distal epiphysis (R. Madgwick) from [610], fill of postpipe [627] (Whittle 1997, 81, fig. 30), cut into fill of enclosure 2 outer ditch [630] in trench M	3848±32	-20.4±0.2	6.8±0.3	3.2
SUERC-58633	Context [610] find <6247> sample A	Animal bone, pig right femur with refitting unfused proximal epiphysis (R. Madgwick) from [610], fill of postpipe [627] (Whittle 1997, 81, fig. 30), cut into fill of enclosure 2 outer ditch [630] in trench M	3679±32	-22.0±0.2	6.3±0.3	3.6
UBA-22619	Context [610] find <6247> sample B	Replicate of SUERC-58633	3790±36	-21.6±0.22	6.1±0.15	3.2
	Context [610] find <6247>	T'=5.3; T'(5%)=3.8; v=1	3729±24			
UBA-22631	Context [610] find <6304>	Animal bone, pig right femur with refitting unfused distal epiphysis (R. Madgwick) from same context as SUERC-58632	3891±35	-22.0±0.22	5.7±0.15	3.2
CAR-1295		Animal bone, cattle from the core of postpipe [626] (Whittle 1997, 12, 81, fig. 30) cut into fill of enclosure 2 ditch [630] in trench M	4050±70			
CAR-1294		Animal bone, cattle from the core of postpipe [627] (Whittle 1997, 12, 81, fig. 30) cut into fill of enclosure 2 ditch [630] in trench M	3620±70			
UBA-31110	Context [611] sample A	Charcoal, <i>Quercus</i> sp. sapwood (single fragment; C. Cartwright) from [611], the postpipe core of postpipe [628], in a row of four substantial postpipes [625-627] within the backfill of enclosure 2 ditch [630]. These represent former posts, which had been let into shallow, slightly irregular sockets up to 0.2m deep and no more than 0.5m across	4455±37	-24.0±0.22		
SUERC-65188	Context [611] sample B	Charcoal, <i>Quercus</i> sp. sapwood (single fragment; C. Cartwright) from the same context as UBA-31110	4572±30	-24.1±0.2		
SUERC-58637	Context [612] find <6146> sample A	Animal bone, cattle first phalanx with refitting unfused epiphysis (R. Madgwick) from around the outer visible part of postpipe [625] and in the space between postpipes [626] and [627] (Whittle 1997, 81, fig. 30) cut into fill of enclosure 2 outer ditch [630] in trench M	3766±32	-23.2±0.2	6.3±0.3	3.4
UBA-22620	Context [612] find <6146> sample B	Replicate of SUERC-58637	3871±38	-23.2±0.22	6.3±0.15	3.2
	Context [612] find <6146>	T'=4.5; T'(5%)=3.8; v=1	3810±25			
GU36833	Context [629] find <6377> sample A	Probable antler pick (R. Madgwick) from the main fill [629] (Whittle 1997, 77, fig. 44) of enclosure 2 ditch [630] in trench M	Failed			

UBA-22621	Context [629] find <6377> sample B	Replicate of GU36833	Failed			
Ditch — trench BB						
SUERC-58640	Context [7009] find <70057>	Animal bone, pig sacrum with unfused but articulating first and second sacral vertebrae (R. Madgwick) from postpipe [7009] (Whittle 1997, 82) set close to the inner edge of enclosure 2 outer ditch [7002] in trench BB	3770±32	-21.4±0.2	5.8±0.3	3.2
UBA-22624	Context [7012] find <70061>	Animal bone, medium mammal thoracic vertebra with refitting unfused caudal plate (R. Madgwick) from [7012], a small group of bones found in the main fill in outer ditch [7002] at 1m, on the outside of postpipe [7008] (Whittle 1997, 82). From the ditch of enclosure 2 in trench BB.	3858±35	-20.6±0.22	6.3±0.15	3.2
Structure 2 — trench Z						
SUERC-58638	Context [5113] find <51222>	Animal bone, sheep/goat left femur with refitting unfused proximal epiphysis (R. Madgwick) from [5113], packing from around a row of six postpipes [5046] (Whittle 1997, 84, fig. 54) cut into the fill of ditch [5002], part of the outer ring of structure 2 in trench Z	3785±28	-23.6±0.2	5.6±0.3	3.3
Structure 3 — trench AA						
SUERC-58639	Context [6006] find <60036> sample A	Antler pick (R. Madgwick) from fill [6006] of the inner ring ditch [6005] (Whittle 1997, 85, fig. 55) of structure 3 in trench AA	3496±32	-22.6±0.2	6.3±0.3	3.3
UBA-22623	Context [6006] find <60036> sample B	Replicate of SUERC-58639	3818±40	-22.6±0.22	6.1±0.15	3.2
	Context [6006] find <60036>	T'=39.8; T'(5%)=3.8; v=1	n/a			
UBA-22625	Context [6021] find <60303>	Animal bone, pig left femur with refitting unfused distal epiphysis (R. Madgwick) from [6021], postpipe in outer ring [6003] (Whittle 1997, 85, fig. 55) of enclosure 2 structure 3 in trench AA	3861±41	-21.5±0.22	5.3±0.15	3.2
Structure 1 — trench Y						
UBA-22632	Context [4051] find <41019>	Animal bone, cattle left calcaneum with refitting unfused epiphysis (R. Madgwick) from [4051] (Whittle 1997, 84), a concentration of animal bone on the outer side and across the middle of the structure 1 inner ditch in trench Y	3781±37	-24.1±0.22	8.5±0.15	3.2
Outer radial ditch 1 — trench S						
CAR-1292		Animal bone, cattle from postpipe packing? (Whittle 1997, 12, 83, fig. 45) in bedding trench [560], enclosure 2, outer radial ditch 1 in trench S	3930±70			
CAR-1298		Animal bone, cattle from the same context as CAR-1292	3830±70			

Fifty-one further radiocarbon dates have been obtained in 2014–16 as part of this programme of research. All samples were single fragments of animal bone, antler or charcoal. All the charcoal samples were single fragments of oak sapwood.

The reported results are conventional radiocarbon ages (Stuiver and Polach 1977) (Table 17.1). The Scottish Universities Environmental Research Centre (SUERC) processed 12 samples of bone and antler using gelatinisation and ultrafiltration and 12 samples of charcoal, which were then combusted to carbon dioxide, graphitised and dated by Accelerator Mass Spectrometry

(AMS) (Dunbar *et al.* 2016). The ^{14}C CHRONO Centre, The Queen's University, Belfast processed 13 samples of bone and antler and 12 samples of charcoal using methods described by Reimer *et al.* (2015). All samples were graphitised using zinc reduction (Slota *et al.* 1987), except for UBA-22630, which was subject to hydrogen reduction (Vogel *et al.* 1984). Three further bone samples failed to produce sufficient protein for dating.

Five pairs of replicate radiocarbon measurements are available, three on antlers and two on animal bones that were dated by both SUERC and Belfast. Only one of these pairs of measurements is statistically consistent at 95% confidence (SUERC-58631 and UBA-22622), two are inconsistent at 95% confidence, but consistent at 99% confidence (SUERC-58633 and UBA-22619, SUERC-58637 and UBA-22620), and two are inconsistent at more than 99% confidence (SUERC-58623 and UBA-22618, SUERC-58639 and UBA-22623; Ward and Wilson 1978) (Table 17.1). This reproducibility is not within statistical expectation, and so the accuracy of these measurements has been assessed during the modelling process by their compatibility with related radiocarbon results.

Replicate carbon and nitrogen stable isotopic ratios are also available for these five samples. All the replicate pairs are statistically consistent at 95% confidence (Ward and Wilson 1978), except for the $\delta^{15}\text{N}$ values for the fragment of antler pick from context [325] (SUERC-58631 and UBA-22618), which are widely separated (Table 17.1). Both reported values are within the observed range for antler from this site, and so we have no indication which measurement is erroneous.

Chronological modelling

The chronological models presented in this paper have been constructed using the program OxCal v4.2 (Bronk Ramsey 2009; Bronk Ramsey and Lee 2013) and the atmospheric calibration

curve for the northern hemisphere published by Reimer *et al.* (2013). The algorithms used are defined exactly by the brackets and OxCal keywords on the left-hand side of Figs 17.3, 17.5, 17.6, 17.10, 17.11, 17.13, 17.14 and 17.16a–b (<http://c14.arch.ox.ac.uk/>). The posterior density estimates output by the model are shown in black, with the unconstrained calibrated radiocarbon dates shown in outline. The other distributions correspond to aspects of the model. For example, the distribution ‘*build_WK_enclosure_1*’ (Fig. 17.3) is the posterior density estimate for the date when palisade enclosure 1 was constructed. In the text and tables, the highest posterior density intervals of the posterior density estimates are given *in italics*.

An overall plan of the West Kennet palisade enclosures showing the locations of the dated samples is provided in Figure 17.2. The results on the charcoal samples from the posts of the enclosures are clearly nearly a millennium earlier than those from the articulating animal bone and, unexpectedly, must represent an unrelated episode of activity. We have therefore constructed two separate models for the different phases of use of the site.

The palisade enclosures

The model for the construction of the two palisade enclosures is shown in Figure 17.3. It has good overall agreement (Amodel: 65).

Palisade enclosure 1 comprises two roughly concentric, sub-circular ditches, with a series of post-holes demarking a timber palisade in each ditch. The palisade ditches were at least 2m deep, although some variability was apparent. The inner ditch was consistently wider than the outer ditch, reaching over 3m in trenches D and F, while in trenches C, D and G the outer ditch was less than 1m wide. Both the inner and outer ditches had been deliberately backfilled with spoil, and a more or less continuous line of posts had been erected.

Sixteen measurements are available on single fragments of oak

sapwood from post-pipes, post-pipe rows and from around post-pipes. We interpret these samples as the outermost rings of the vertical timbers that formed the palisades. Six samples come from posts set into the inner ditch in trenches F and J, and ten from posts set into the outer ditch in trenches E, G and H (Fig. 17.2). Three of the samples from the outer ditch in trench H appear to relate to an otherwise unrecognised episode of activity at the end of the second millennium cal BC (UBA-31103–4 and SUERC-65179) (Table 17.1). These measurements are not included in the modelling and are not shown on Figure 17.3.

As the amount of sapwood in prehistoric oaks in England varies between 10–55 rings (Hillam *et al.* 1987), the best estimate for the date of construction of enclosure 1 is provided by the latest date on the sapwood. This model suggests that West Kennet palisade enclosure 1 was constructed in 3335–3095 cal BC (95% probability; *build_WK_enclosure_1*; Fig. 17.3), probably in 3325–3240 cal BC (68% probability).

The general character of the palisade ditch of enclosure 2 was identical to enclosure 1, comprising a backfilled ditch about 2m deep with basal sockets and closely spaced post-pipes. But unlike enclosure 1, enclosure 2 only has a single ovoid ditch varying in width from 1.6–1.8m (in trenches K and M) to 3m wide in trench T. Most of the post-pipes of enclosure 2 were of larger diameter than those of enclosure 1.

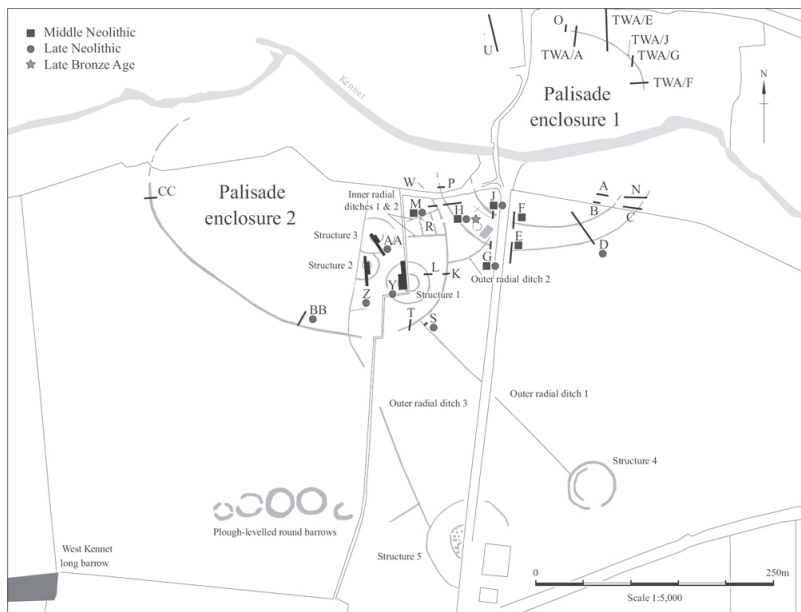


Figure 17.2. Overall plan of the West Kennet palisade enclosures showing the locations of the dated samples (© Historic England).

Eight measurements are available on single fragments of oak sapwood from post-pipes in trench M. Again, the best estimate for the date of construction of the enclosure is provided by the latest date on the sapwood. This model suggests that West Kennet palisade enclosure 2 was constructed in 3330–3080 *cal BC* (95% probability; *build_WK_enclosure_2*; Fig. 17.3), probably in 3320–3235 *cal BC* (68% probability).

Figure 17.4 shows the difference between these estimates for the construction date of each enclosure. Clearly, within the uncertainties of our date estimates, the interval between their constructions was negligible. We must therefore consider whether they could have been built in a single episode. By combining the posterior distributions for their dates, we can estimate that this would have occurred in 3325–3215 *cal BC* (95% probability; *build_WK_enclosures*; Fig. 17.5), probably in 3315–3270 *cal BC* (68% probability). The date estimates are in good agreement with

this interpretation (Acomb: 150; An: 50; n: 2).

Figure 17.5 shows the estimated date of construction of the West Kennet palisade enclosures from three, alternative, archaeological readings. Scenario 1 treats the two circuits of enclosure 1 as a related, but not necessarily precisely contemporary, period of construction (Fig. 17.3). Scenario 2 treats each enclosure as unitary construction, but does not assume that these were related in any way. Scenario 3 treats the two enclosures as one unitary construction. Clearly these differences in archaeological interpretation do not affect the estimated date of the enclosure materially.

Within the interior of palisade enclosure 2 are three internal structures (structures 1, 2 and 3; Fig. 17.2). These take the form of much smaller ditched enclosures, each with at least two broadly concentric circular ditches into which were set a series of closely spaced timber uprights (Whittle 1997, figs 49–50, 52–5). A series of radial ditches also run from palisade enclosure 2. Inner radial ditches 1 and 2 have been recorded from aerial photographs and by geophysical survey, but have not been sampled by excavation. Outer radial ditch 1 appears to lead to a fourth ditched enclosure only seen from aerial photographs (structure 4). A trench was cut through this ditch in 1990, revealing a burnt palisade of close-set timbers about 20–30cm apart (Whittle 1997, 83). Outer radial ditch 2 appears to run between palisade enclosures 1 and 2, but has not been sampled by excavation. Outer radial ditch 3, which appears to run south from the interior of palisade enclosure 2 to a further ditched enclosure (structure 5), was mapped through aerial photography in 2002 (Barber *et al.* 2003).

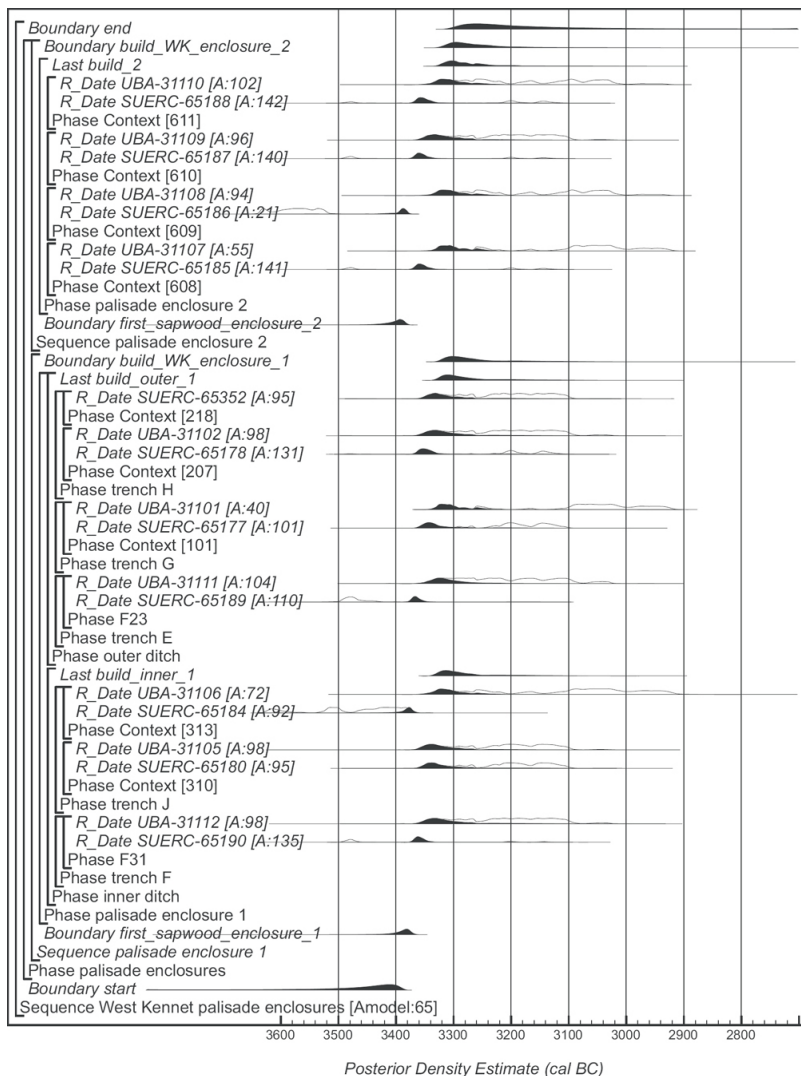


Figure 17.3. Probability distributions of dates from the West Kennet palisaded enclosures. Each distribution represents the relative probability that an event occurs at a particular time. For each of the dates two distributions have been plotted: one in outline, which is the result of simple radiocarbon calibration, and a solid one, based on the chronological model used. Other distributions correspond to aspects of the model. For example, the distribution ‘build_WK_enclosure_1’ is the estimated date when the West Kennet palisaded enclosure 1 was

constructed. The large square brackets down the left-hand side of the diagram, along with the OxCal keywords, define the overall model exactly (<http://c14.arch.ox.ac.uk/>).

The presence of closely set timber uprights in these enclosures and ditches, all of which appear to have been burnt like those of the palisade enclosures, suggests that these elements of the complex were also constructed in the decades around 3300 cal BC. It should be noted, however, that sequence has been suggested (e.g. that structures 2 and 3 were constructed against the already standing palisade of outer radial ditch 3, Leary *et al.* 2013a, 234), although the time-depth of this relative dating cannot be known without excavation and further radiocarbon dating.

It seems clear that palisade enclosures 1 and 2 were constructed at more or less the same time (Fig. 17.5), and were thus probably in contemporary use. This has implications for interpreting their layout and understanding their function (e.g. Thomas 2002, 218). The chronological modelling does not tell us anything about the duration of their use, which has to be inferred from circumstantial evidence. Both enclosures, and at least the innermost area of outer radial ditch 1, seem to have been destroyed by fire. This raged across a distance of c. 500m, as the palisade of enclosure 2 in trench CC was burnt, as was the palisade of enclosure 1 in trench TWA O (Whittle 1997, 69–70, 82). In total, over 2.2km of palisade and 4400 timber posts were consumed in the conflagration. Given the difficulties of fire-setting substantial green oak timbers, this destruction must have been deliberate.

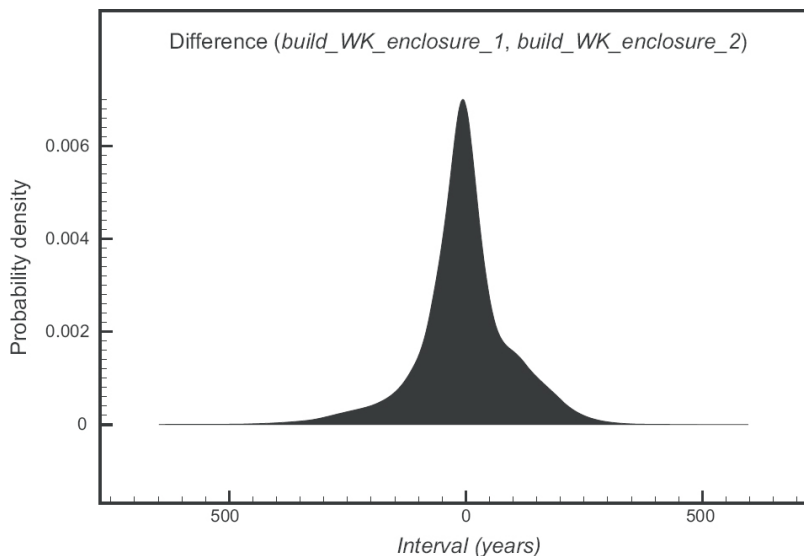


Figure 17.4. Probability distributions for the number of years between the constructions of the two palisaded enclosures at West Kennet (derived from the model shown in [Fig. 17.3](#)).

The scale of the timber constructions must be compared with the size of the associated assemblage of finds. This comprises one abraded rim of Peterborough Ware in the Mortlake sub-style from trench BB (Whittle 1997, 102, fig. 62 no. 34) and possibly a retouched fragment of a polished axe from the primary fill of the inner ditch of structure 1 (Whittle 1997, 92, fig. 59 no. 33). Even when we consider that well under 1% of the palisade ditches have been excavated, the contemporary finds assemblage can hardly have been extensive. None of the 25 samples of animal bone and antler that have been dated appear to relate to the construction and use of the palisade enclosures (although there were a few antler fragments from the backfill of their ditches that might be related to construction (Whittle 1997, 61)), and so it is probable that almost none of the faunal assemblage relates to this period of use of the site. Even if most everyday items in this period were made from perishable material, such a tiny finds assemblage from such an extensive site seems to suggest a limited period of use. If,

following Wainwright and Longworth (1971, 224–5), we use a rough calculation of oak post decay as 15 years per inch (2.5cm), then the posts of enclosure 1 would have entirely decayed within 150–200 years, and the more substantial posts of enclosure 2 after about 300 years. But we know that both palisades were standing when they were burnt down and we have no evidence of later timber replacement from the assemblage of radiocarbon dates. Together these lines of evidence suggest a duration of perhaps a few generations or a century at most.

The Grooved Ware settlement

The second period of use of the area of the West Kennet palisade enclosures is represented by the radiocarbon dates on 25 samples of bone and antler, by an assemblage of over 500 sherds of Grooved Ware and (probably) by the majority of the struck flint recovered from the site. Since the excavations, these finds have been interpreted as associated with the use of the timber enclosures. Their respective radiocarbon dates clearly demonstrate that this was not the case.

Re-thinking the taphonomy of this later finds assemblage is obviously required. A close reading of the stratigraphic report demonstrates that the majority of bone and antler finds were found ‘at the edge of post-pipes, and occasionally within them; hardly any was found in the backfill of the ditches’ (Whittle 1997, 61, see also 76). Similarly, ‘one of the most significant characteristics of the pottery in the ditches of palisade enclosures is its depth (often 2m below the surface), its fresh appearance, and its frequent occurrence resting on the edge of postpipes’ (Whittle 1997, 116). This led the excavator to suggest that these finds were placed around posts as the ditch was backfilled. In contrast, given the disparity between the dates of the posts and the dates of the finds, it seems likely to us that the artefacts fell into the soft charcoal-rich sediments and voids of the post-pipes from overlying

Grooved Ware occupation in the area of the enclosures.

The model for Grooved Ware occupation in the area of the palisade enclosures is shown in [Figure 17.6](#). It has good overall agreement (Amodel: 64). We consider the elements of this model from east to west.

Two single fragments of antler from the upper part of the ditch in trench D, BM-2602 from the edge of palisade post-pipe F40 and BM-2597 from upper deposits in the edge of the ditch, were dated soon after excavation. Post-pipe F40 contained a substantial void (Whittle 1997, 62).

Replicate measurements (SUERC-58623 and UBA-22618) on an antler pick from ditch fill [111] in trench G are statistically inconsistent at more than 99% confidence ([Table 17.1](#)), however, a weighted mean (3912 ± 24 BP) was calculated as providing the best estimate for its age, which has good individual agreement in the model (1038; A: 100) ([Fig. 17.6](#)). The posts of the outer palisade of enclosure 1 were cut into this fill. Cattle bone (CAR-1293) from the edge of post-pipe [123] in trench G was dated at Cardiff in the mid-1990s.

Two samples have been dated from trench J. Measurements on an antler pick from fill [325] of the inner ditch of palisade enclosure 1 (SUERC-58631 and UBA-22622) are statistically consistent ([Table 17.1](#)) and a weighted mean (3900 ± 24 BP) provides the best estimate for the age of the antler. The posts were set into this fill, and one cordoned Grooved Ware sherd was found in post-pipe [313] at a depth of 1.8m (Whittle 1997, 66). A bulk sample of pig bone from four of the palisade post-pipes, 311 and 313–15 (CAR-1291), was also dated in this trench.

Five dark and charcoal-rich post-pipes visible in the fill of the outer ditch of palisade enclosure 2 in trench H were surrounded by a quantity of animal bone. Measurements have been made on two samples of bulk pig bone (CAR-1289–90) and two immature pig femora with refitting unfused epiphyses (UBA-22630, SUERC-58627) from this deposit. Trench H was extended to the

east, into the area between the inner and outer ditches of enclosure 1, and a number of features and deposits located. Samples from an antler pick (SUERC-58630) and an immature pig lumbar vertebra with refitting unfused plate (UBA-22627) were dated from chalky layer [222/238] that was stratigraphically below context [215]. Five determinations (SUERC-58628–9, CAR-1296–7 and UBA-22629) on samples from the rich assemblage of animal bone in [215] were dated.

Samples were dated from the outer zones of two ([626 and 627]) of the row of four substantial post-pipes [625–8] within the backfill [629] of the ditch of palisade enclosure 2 in trench M, together with samples from the bone packing around post-pipe [625]. Three pig femora with refitting unfused epiphyses were dated from the fill of post-pipe [627] (SUERC-58632–3, UBA-22619 and UBA-22631). Although only statistically consistent at 99% confidence ([Table 17.1](#)), a weighted mean of the two measurements on one pig femur (3729 ± 24 BP; SUERC-58633 and UBA-33619) has been taken as providing the best estimate for its age, as they are from the same individual. A sample of cattle bone was also dated from this deposit in the 1990s (CAR-1294). At this time another radiocarbon measurement (CAR-1295) was produced on cattle bone from the core of post-pipe [626]. The two radiocarbon measurements on an immature cattle phalanx with refitting unfused epiphysis (SUERC-58637 and UBA-22620) from the bone packing [612] around post-pipe [625] are only statistically consistent at 99% confidence ([Table 17.1](#)), but a weighted mean (3810 ± 25 BP) has been taken as providing the best estimate for its age. Finally, a single immature pig femur with refitting unfused epiphysis (UBA-22626) from a dark ashy layer [605] in the upper part of the ditch is stratigraphically later than its infilling after removal of the posts. This deposit may be a rare example of *in situ* Grooved Ware occupation on the site.

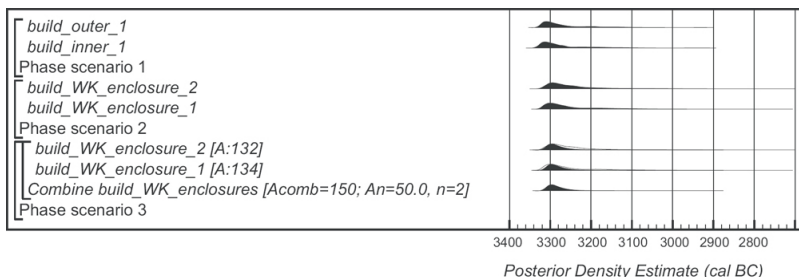


Figure 17.5. Probability distributions for the construction of the West Kennet palisaded enclosures following alternative archaeological interpretations: (1) separate unitary constructions for each circuit, (2) separate unitary constructions for enclosures 1 and 2, (3) unitary construction of entire complex.

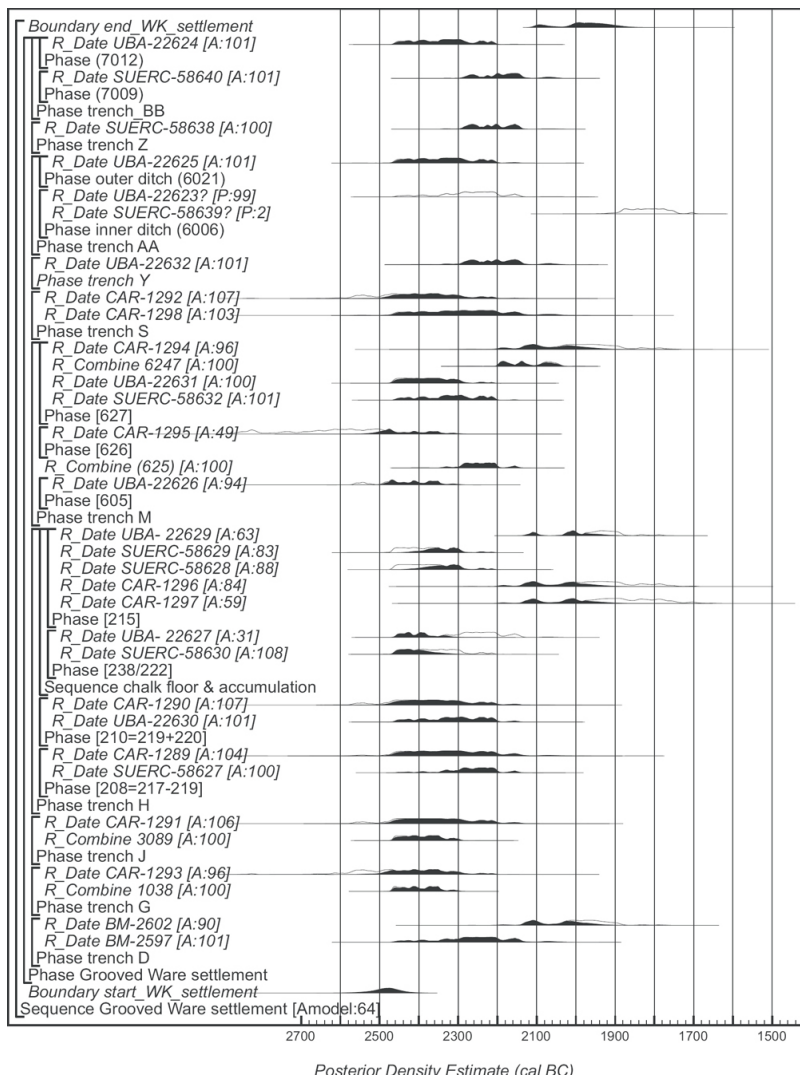


Figure 17.6. Probability distributions of dates from the West Kennet Grooved Ware settlement. The format is identical to that of Figure 17.3. Measurements followed by a question mark and shown in outline have been excluded from the model for reasons explained in the text and are simple calibrated dates (Stuiver and Reimer 1993). The large square brackets down the left-hand side of the figure, along with the OxCal keywords, define the model exactly.

Two samples of cattle bone from the bedding trench of the palisade in outer radial ditch 1 were dated in the 1990s (CAR-1292 and CAR-1298).

An immature cattle calcaneum with refitting unfused epiphysis (UBA-22632) was dated from a concentration of animal bone [4051] recovered from 'the outer side and across the middle of the ditch in the upper primary fill' (Whittle 1997, 84) of the inner ring of structure 1 in trench Y.

In trench AA, an immature pig femur with refitting unfused epiphysis was dated from [6021], one of the post-pipe fills of the outer ring of structure 3 (UBA-22625). Two measurements from a probable antler pick (SUERC-58639 and UBA-22623) from fill [6006] of the shallow inner ditch of structure 3 are statistically inconsistent at well over 99% confidence ($T' = 39.8$; $T' (5\%) = 3.8$; $v = 1$). Initially, both measurements were included separately in the chronological model for the Grooved Ware settlement (see below). Fill [6006] was cut by several post-pipes, but it should be noted that this ditch is of a very different character to the other ditches that we have interpreted as middle Neolithic at West Kennet.

Six post-pipes (row [5046]) with very dark fills with much charcoal flecking were identified in the outer circuit of structure 2 in trench Z. A backfilled deposit [5113] of flinty clayey gravel around the post-pipes contained some charcoal flecking and animal bones from which a caprine femur with refitting unfused epiphysis was dated (SUERC-58638).

In the main fill of the ditch of palisade enclosure 2 in trench BB at a depth of 1m a small group of bones [7012] was recovered from the outer side of post-pipe [7008]. A measurement (UBA-22624) on a medium mammal thoracic vertebra with refitting epiphyseal plate was obtained. Another measurement was made on a pig sacrum with unfused but articulating sacral vertebrae from the edge of post-pipe [7009] (SUERC-58640).

The model shown in [Figure 17.6](#) treats all these dated samples

as deriving from a single, continuous and relatively constant period of occupation in the area of the palisade enclosures. Both measurements from the antler pick in trench AA (SUERC-58639 and UBA-22623) have good individual agreement in this reading (A: 63 and A: 100 respectively; model not shown). Since these measurements are replicates on a single object, they cannot both be accurate. In the absence of independent information determining which is correct, we have chosen to exclude both from the final model.

This model suggests that the Grooved Ware occupation at West Kennet began in 2575–2405 cal BC (95% probability; *start_WK_settlement*; Fig. 17.6), probably in 2520–2440 cal BC (68% probability). The occupation ended in 2115–1865 cal BC (95% probability; *end_WK_settlement*; Fig. 17.6), probably in 2100–2080 cal BC (5% probability) or 2015–1905 cal BC (63% probability).² The area was occupied for a period of 310–615 years (95% probability; *WK_settlement*; Fig. 17.7), probably for 420–575 years (68% probability).

There is a clear gap between the construction of the palisade enclosures and the establishment of Grooved Ware activity on the site, which is estimated as 685–895 years (95% probability; *enclosures-settlement*; Fig. 17.8), probably 760–850 years (68% probability).

This raises the question of why the Grooved Ware activity was located on the same site as the enclosures when, as discussed above, the timber palisades would have been long ago destroyed. There must have been visible earthworks, either in the form of slight banks formed from spoil that was not immediately replaced in the enclosure ditches as packing around the posts, or in the form of hollows in the top of the ditches themselves as these settled. Context [605], recorded in the upper part of the ditch of palisade enclosure 2 in trench M (Whittle 1997, fig. 44), may support the latter suggestion as this appears to be a coherent dump of occupation refuse rather than displaced material which

fell into the post-pipes of the palisade.

Next we must consider the character of the late Neolithic activity in the area of the enclosures. Was this simply a spread of occupation debris on the surface, which only survived later erosion either in isolated patches in hollows in tops of the earlier ditches or when it fell deeper into those ditches down the voids and soft sediments of the post-pipes? There are hints that there may have been more. In trench H, between the ditches of palisade enclosure 1, was a laid chalky layer up to 10cm thick and at least 4m in length [222/238] (Whittle 1997, 71–6, fig. 43, plate 31). The site notebook describes it as containing a number of post-holes [227, 239–41, 246], with [238] described as a ‘scoop’ with a chalk base. The lowest infill of this scoop [223] also contained a number of post- or stake-holes [234–7]. This was subsequently filled with rubbish including bone deposit [215]. Similar features may be represented by a layer of chalk rubble, c. 10cm thick and at least 3.2m in length [228], recorded by Wessex Archaeology in TWA/F (Whittle 1997, fig. 39), and a ‘paddled chalk floor’ revealed in TWA/G (Whittle 1997, 69). With the benefit of hindsight, these may be chalk-floored structures, analogous to the better-preserved examples recently identified at Durrington Walls (Parker Pearson 2007, fig. 12.12) and Marden (Leary and Field 2012, fig. 4). They appear to be similar both in character and in dimensions, as that from Marden is $3.8 \times 3.3\text{m}$ and, for example, house 851 at Durrington Walls was $4.8 \times 5.2\text{m}$.

If we are correct in suggesting that these features are the remnants of late Neolithic structures, then the settlement could have been extensive. Either Grooved Ware or animal bones with third millennium radiocarbon dates have been recovered from across the area of the palisade enclosures south of the Kennet stream (from trench CC in the west to trench B in the east, across a distance of almost 500m; Whittle 1997, table 30) (Figs 17.2 and 17.6). No information on the finds from the evaluation undertaken by Wessex Archaeology on West Kennet Farm has been published,

so the existence of late Neolithic settlement north of the stream is more uncertain.

Discussion

The new dating of the West Kennet palisade enclosures and the identification of a previously unsuspected late Neolithic settlement on the site clearly demand rethinking the place of the West Kennet valley bottom in both the story of Neolithic Avebury and in the wider narrative of the British Neolithic.

The Avebury area in the Neolithic

The revised dating for the construction of the West Kennet palisade enclosures to the decades around 3300 cal BC (some 800 years earlier than previously suggested) places them in an entirely different contemporary context.

The causewayed enclosures at Windmill Hill and Knap Hill (and probably Rybury also) had been constructed several centuries earlier, but they had gone out of use perhaps only a few generations before the West Kennet palisade enclosures were built (Fig. 17.9). Some elderly members of the community which built them may even have remembered gathering within the circuits of the nearby causewayed enclosures for performances in the round. Circularity and enclosure was thus probably an actively remembered, if not living, tradition.

Long barrows were also an active part of the lived experience of the community. Some, West Kennet and perhaps Horslip, had been long abandoned but others, perhaps locally the majority (Millbarrow, South Street, perhaps Easton Down), were probably still in use, and at least one (Beckhampton) may not yet even have been built (Fig. 17.9).

At the time the palisade enclosures were constructed, the primary early Neolithic use of Windmill Hill had come to an end.

There was, however, clearly later Neolithic activity around the circuits, particularly in the north-east quadrant of the outer ditch. Here, a major recut has been identified in the ditch in trench B, which may be also visible in Keiller's section across outer ditch III (Whittle *et al.* 2011, fig. 3.14). There are also third millennium radiocarbon dates on samples from the outer ditch in trenches B, C, outer ditch I and outer ditch V (Whittle *et al.* 2011, table 3.2). It is not clear whether activity extended around the whole circuit, as no late radiocarbon dates were obtained from trench A on the other side of the circuit, and the section here shows no clear recut (Whittle *et al.* 1999, fig. 81). [Figure 17.10](#) shows a chronological model for the date of later Neolithic activity at Windmill Hill, including the relative sequence of samples inferred from stratigraphy (Whittle *et al.* 2011, 88–91). Whilst episodic activity clearly continued for much of the third millennium, it seems likely that the major recutting episode in the outer ditch dates to the thirty-first or thirtieth century cal BC and thus post-dates the construction of the palisade enclosures.

At the time when there was a hiatus in activity in the valley bottom, between the use of the palisade enclosures and the foundation of the Grooved Ware settlement, the enclosure at Longstones was constructed. [Figure 17.11](#) shows a chronological model for this enclosure, interpreting the dated antler from trench 23 as collected for digging the ditch.³ The latest of these thus provides a *terminus post quem* for its construction. As far as we know, next in the local sequence came the initial construction of the massive henge ditch at Avebury ([Fig. 17.9](#)). Further elements were added to the Avebury henge through the middle centuries of the third millennium.

The Grooved Ware settlement at West Kennet was then established –40–140 years (95% probability; *WK_Silbury*; [Fig. 17.12](#)) before the completion of the lower organic mound at the centre of Silbury Hill, probably 1–85 years before (68% probability). The settlement seems to have been occupied through the twenty-fifth,

twenty-fourth and twenty-third centuries cal BC during the time when people were constructing and enlarging the mound at Silbury. Occupation endured here, however, after the mound was finished. It continued until the end of the millennium, well into the currency of Beakers in the Avebury Area (Fig. 17.13).

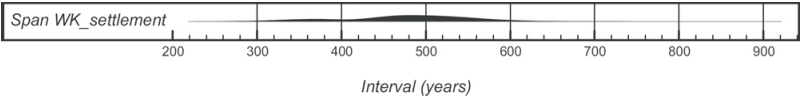


Figure 17.7. Probability distribution for the number of years during which settlement activity occurred at West Kennet, derived from the model defined in Figure 17.6.

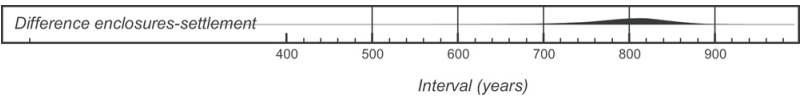


Figure 17.8. Probability distributions for the number of years between the constructions of the palisaded enclosures and the Grooved Ware settlement at West Kennet (derived from the models shown in Figs 17.3 and 17.6).

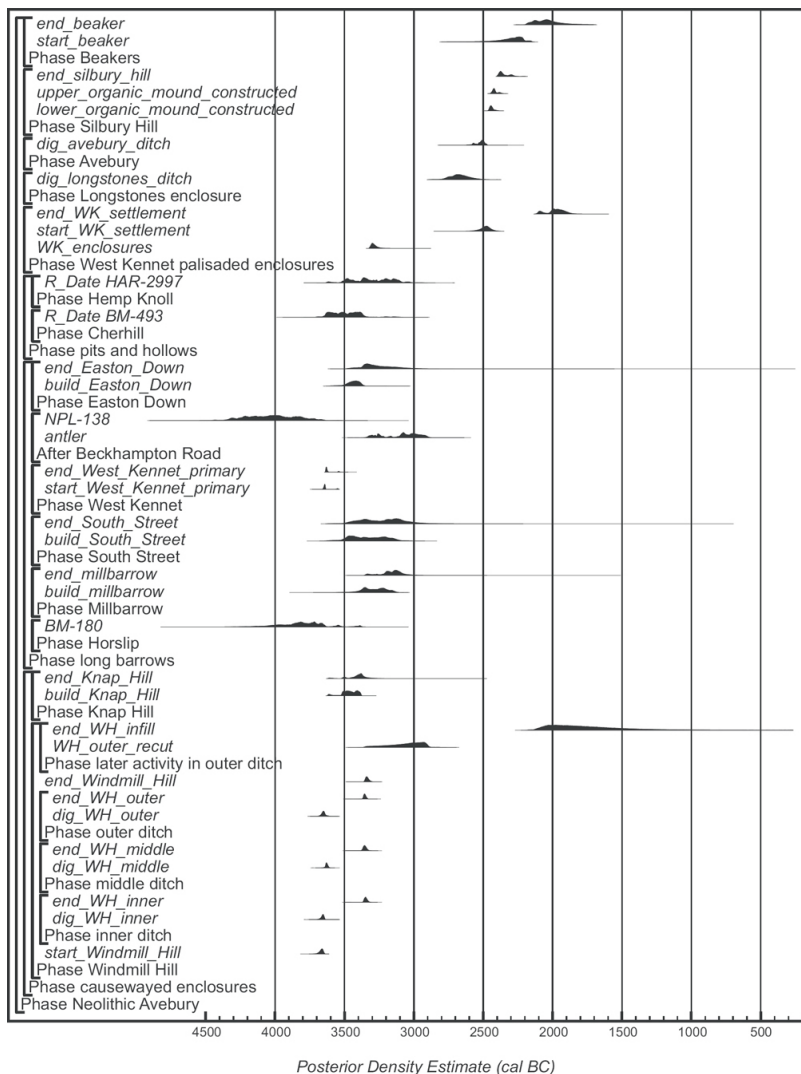


Figure 17.9. Probability distributions of dates from Neolithic activity in the Avebury area. Distributions have been taken from the models defined in Whittle et al. (2011, figs 3.8–11, Windmill Hill), Figure 17.10 (Windmill Hill – ditch recut), Whittle et al. (2011, fig. 3.25, Knap Hill; fig. 3.31, Horslip; fig. 3.30, Millbarrow; fig. 3.31, South Street, Beckhampton and Easton Down; fig. 14.52, Cherhill), Bayliss et al. (2007b, figs 6–7, West Kennet long barrow), Figure 17.3 (West Kennet enclosures); Figure 17.6 (West Kennet settlement); Figure

17.11 (*Longstones enclosure*), Healy (2016, fig. 6, Avebury); Marshall et al. (2013, fig. 4.5, Silbury Hill) and Figure 17.12 (*Beakers in the Avebury area*); recalculated as necessary using IntCal13 (Reimer et al. 2013).

Rings of fire

The West Kennet palisade enclosures seem to have been constructed as a single episode in the decades around 3300 cal BC (Fig. 17.5). In a southern British context, this places them well after the time when new causewayed enclosures were established and after all but a few had gone out of use (Whittle *et al.* 2011, [figs 14.12](#), 14.28). With them had gone Decorated and Plain Bowl pottery and the long-distance networks evidenced by the widespread distribution of polished stone axes far from their source (Whittle *et al.* 2011, fig. 14.145).

But there was continuity from earlier Neolithic times. Long barrows and cairns, not least in the immediate surroundings of the West Kennet palisade enclosures, continued to be constructed and used ([Fig. 17.9](#)). The focus of monument construction had, however, moved to the linear form of the cursus. These are notoriously difficult to date, largely due to an almost complete absence of finds, and no example has more than a handful of radiocarbon dates.

A model for the currency of cursus and related monuments in southern Britain is shown in [Figure 17.14](#). This model is largely based on the data and interpretations set out by Barclay and Bayliss (1999, tables 2.1–2), augmented by additional measurements on samples from the primary ditch fills of the Stonehenge Greater cursus (Thomas *et al.* 2009), the Potlock cursus (Beamish 2009) and the Aston on Trent cursus (Loveday 2012) ([Table 17.2](#)). There are also now estimates for the dates of the Maiden Castle long mound and Godmanchester cursus derived from Bayesian chronological modelling of the complexes of which

these monuments form part (Whittle *et al.* 2011, figs 3.8–11, 6.15).⁴

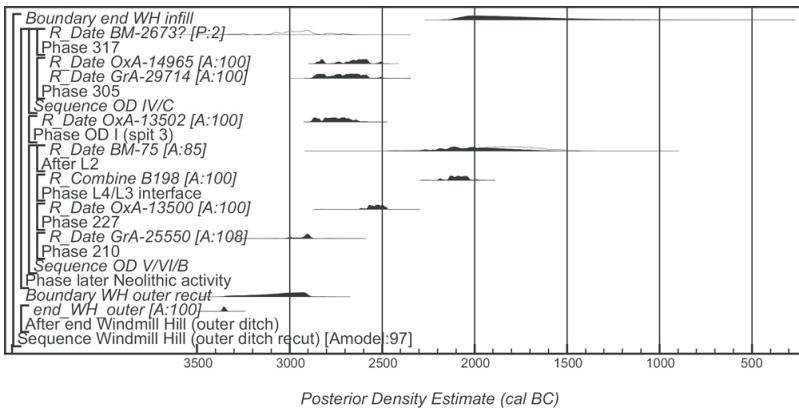


Figure 17.10. Probability distributions of dates for late Neolithic activity on Windmill Hill. The distribution ‘end_WH_outer’ is taken from the model defined by Whittle *et al.* (2011, figs 3.8–11), recalculated using IntCal13 (Reimer *et al.* 2013). The format is identical to that of Figure 17.3. The large square brackets down the left-hand side of the diagram, along with the OxCal keywords, define the overall model exactly.

This model suggests that the construction of cursus and similar linear monuments in southern Britain may fall into a more concentrated horizon that previously suggested (*contra* Whittle *et al.* 2011, fig. 14.44). They were built between 3665–3400 cal BC (95% probability; start linear monuments; Fig. 17.14), probably 3550–3415 cal BC (68% probability), and 3320–2940 cal BC (95% probability; end linear monuments; Fig. 17.14), probably 3295–3085 cal BC (68% probability). The current lack of radiocarbon dates from primary contexts that clearly fall after the plateau of the calibration curve in the last centuries of the fourth millennium cal BC suggests that the construction of this type of monument probably did not continue to the end of the plateau at c. 3000 cal BC. Rather, few if any seem to have been constructed after the thirty-second century cal BC.⁵

The West Kennet palisade enclosures, however, were clearly constructed during the period when cursus and related monuments were the norm (91% *probable*). Despite their circularity, there are many similarities. First, there is the sheer scale of construction. With a continuous palisade 2.2km long, the West Kennet enclosures are analogous in scale to classic cursus sites (Loveday 2006, 26–7). Together they enclose an area of c. 10ha, similar to the Dorchester upon Thames cursus (at 9.9ha) or the Avebury henge itself (at 11.4ha; Loveday 2006, 131–2). They are located in the valley bottom adjacent to the river Kennet (indeed enclosure 1 straddles the stream). In this they mirror the long-established juxtapositioning of cursus monuments and rivers. Finally, as previously described, both cursus monuments and the West Kennet palisade enclosures are almost devoid of finds of any kind.

Palisades are also part of the contemporary repertoire of the third quarter of the fourth millennium cal BC. There were certainly wooden palisades at some causewayed enclosures: at Orsett and Crickley Hill, and less certainly at Eton Wick and Haddenham. Those at Orsett and Crickley Hill were definitely burnt down, the latter during a violent attack. The dating of Haddenham is particularly insecure (Whittle *et al.* 2011, fig. 6.9), but the other three palisades probably fall in the latter part of the currency of causewayed enclosures in the thirty-fifth or earlier thirty-fourth centuries cal BC (Whittle *et al.* 2011, figs 7.10, 8.5, 9.7–10). In scale these palisades seem slighter than those from West Kennet; that at Orsett, for example, was about 1.1km long but was set in a palisade trench only 0.75m deep.

Late in the history of its use, perhaps only a generation or two before the construction of the palisade enclosures at West Kennet (Fig. 17.15), there were also massive works on the top of Hambledon Hill which would have required over a third of the total labour input of the whole complex, totalling over 16,690 worker days (Mercer 2008). This included earthen outworks and palisades along the southern and western sides of the hill, and also

perhaps some rebuilding of the eastern entrance. In all approaching 3km of earthwork and palisade were constructed, making this enterprise analogous in scale those of the major cursus monuments.

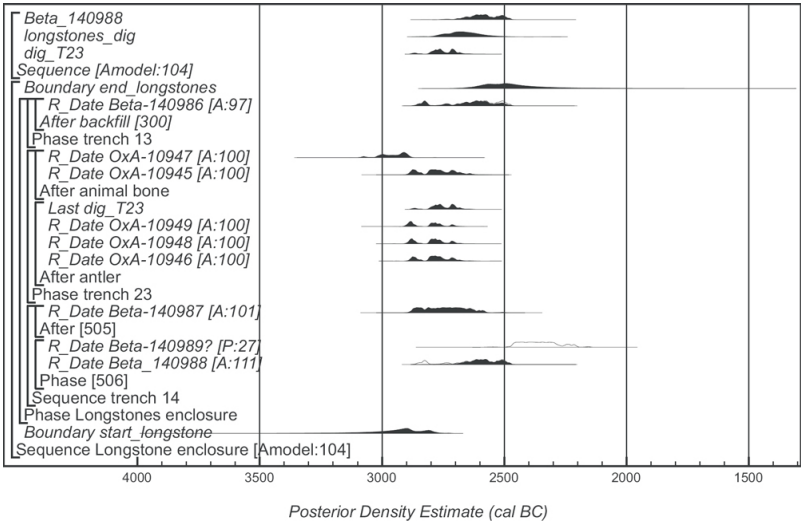


Figure 17.11. Probability distributions of dates from the Longstones enclosure. The format is identical to that of Figure 17.3. The large square brackets down the left-hand side of the diagram, along with the OxCal keywords, define the overall model exactly (<http://c14.arch.ox.ac.uk/>).

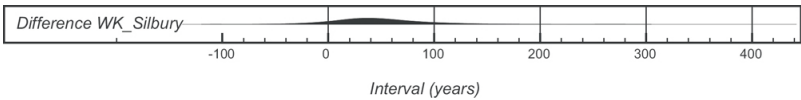


Figure 17.12. Probability distributions for the number of years between the foundation of the Grooved Ware settlement at West Kennet and completion of the lower organic mound in the centre of Silbury Hill (derived from parameters illustrated in Fig. 17.9).

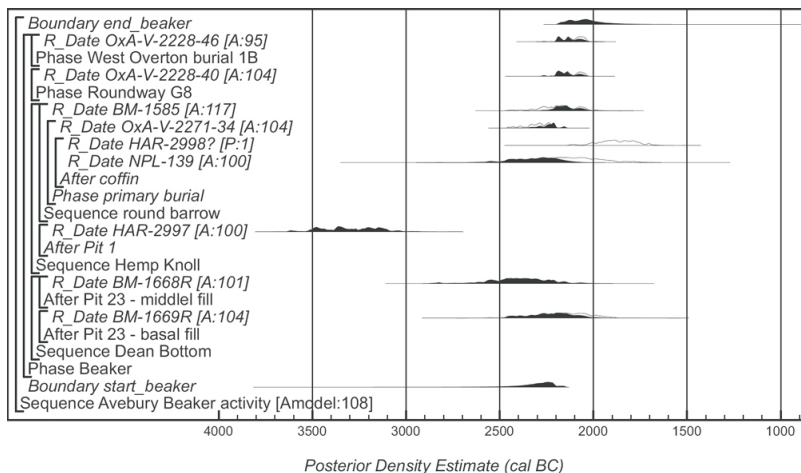


Figure 17.13. Probability distributions of dates associated with Beaker pottery in the Avebury area. The format is identical to that of Figure 17.3. The large square brackets down the left-hand side of the diagram, along with the OxCal keywords, define the overall model exactly (<http://c14.arch.ox.ac.uk/>).

Table 17.2. Radiocarbon and stable isotope measurements from selected English cursus.

<i>Laboratory code</i>	<i>Sample and context</i>	<i>Radiocarbon Age (BP)</i>	<i>$\delta^{13}\text{C}$ (‰)</i>
Aston on Trent (Loveday 2012)			
Beta-100928	Waterlogged twig from the basal fill of the cursus ditch	4780±70	
Potlock (Beamish 2009)			
KIA-2768	Unknown sample from the basal fill of the cursus ditch	4465±30	
Stonehenge Greater (Thomas <i>et al.</i> 2009)			
OxA-17953	Antler, red deer, battered frontal tine from below primary chalk rubble (context 032) at base of western ditch terminal in Tr 26	4716±34	−21.7
OxA-17954	Replicate of OxA- 17953	4695±34	−21.6
OxA-1403	Antler, red deer, from base of ditch	4100±90	−21.0 (assumed)

The impact of the West Kennet enclosures on what came after is harder to assess. Especially if construction of cursus monuments was, as we have suggested, largely confined to the third quarter of the fourth millennium cal BC, it is hard to identify monuments of the thirty-second or thirty-first centuries cal BC in southern Britain. Dating of both timber circles and stone circles is scant and generally of poor quality, although neither seem to have appeared in any numbers before 3000 cal BC (Gibson 1998, fig. 39; Griffiths and Richards 2013, 282–9). Small single-ditched enclosures at Stonehenge and Flagstones probably date to this period (Fig. 17.15), although neither had a palisade. Whether the Aubrey

Holes at Stonehenge contained timber posts or stones, if they were constructed at the time the first cremation deposits were placed in them these do not predate the thirty-first century cal BC.

Grooved Ware settlement

The recognition of the eroded remnants of Grooved Ware settlement in Wessex is extremely difficult. Only recently, with large-scale open area excavations, have structures been identified at Durrington Walls (Parker Pearson 2007) and Marden (Leary and Field 2012). The settlement at West Kennet is similarly located in close proximity to a major late Neolithic monument that was under construction during the period when the settlement was occupied. Similarities extend not only to the form of the houses, but also to the repertoire of ceramic forms that were used and to an economic dependence on pig husbandry. The composition of both the faunal assemblage and the range of vessel forms at West Kennet is consistent with feasting perhaps associated with the process of monument construction (Gillings and Pollard 2016), although in apparent contrast to both this suggestion and the short-lived nature of the settlement at Durrington Walls, that at West Kennet seems to have endured (the duration of the Marden settlement is currently unknown).

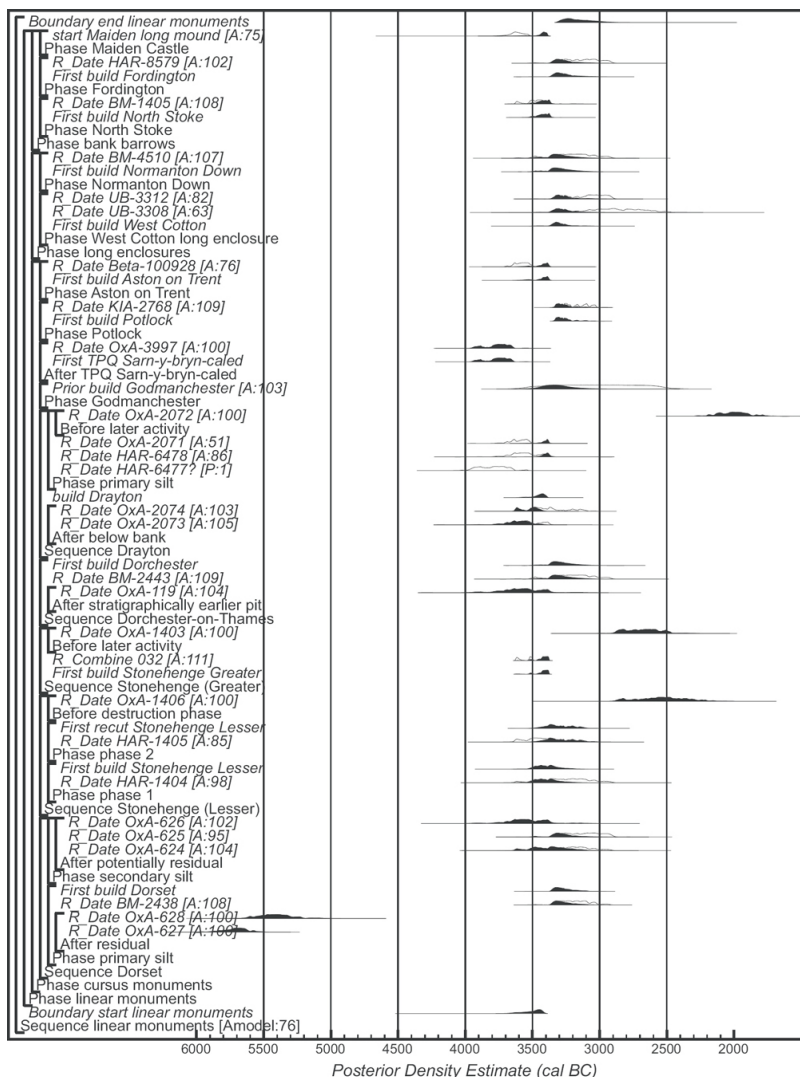


Figure 17.14. Probability distributions of dates from Neolithic linear monuments. Details of the radiocarbon dates from cursus monuments included in the model are given in Barclay and Bayliss (1999, table 2.1), apart from the distribution that has been taken from the model defined in Whittle et al. (2011, fig. 6.15, Godmanchester) and the dates given in Table 17.2. Details of the radiocarbon dates from bank barrows included in the model are given in Barclay and Bayliss (1999, table 2.2), apart from the distribution that that has been taken from

the model defined in Whittle et al. (2011, figs 4.41–5, Maiden Castle). The distributions for Godmanchester and Maiden Castle have been recalculated using IntCal13 (Reimer et al. 2013). The large square brackets down the left-hand side of the diagram, along with the OxCal keywords, define the overall model exactly (<http://c14.arch.ox.ac.uk/>).

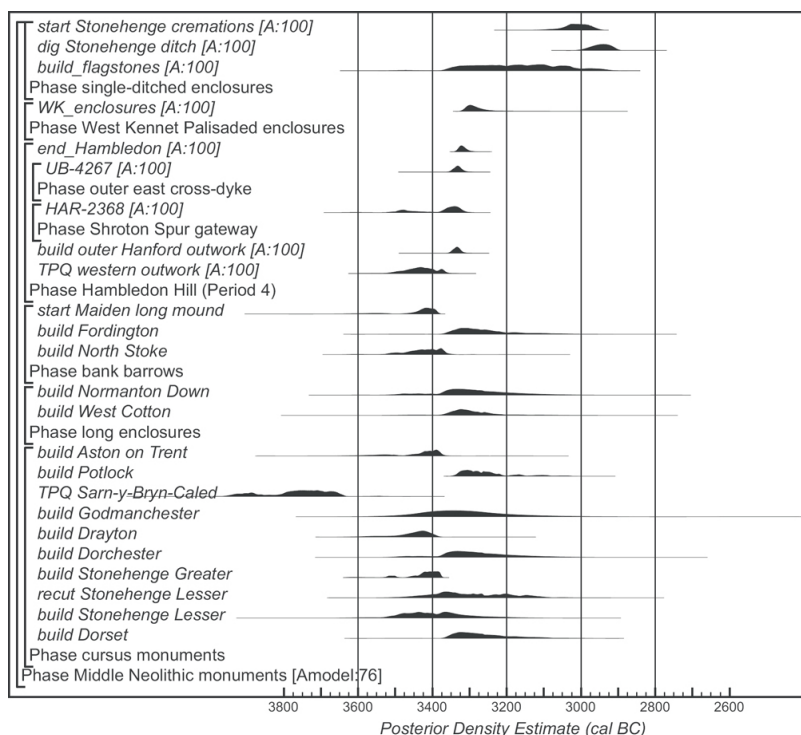


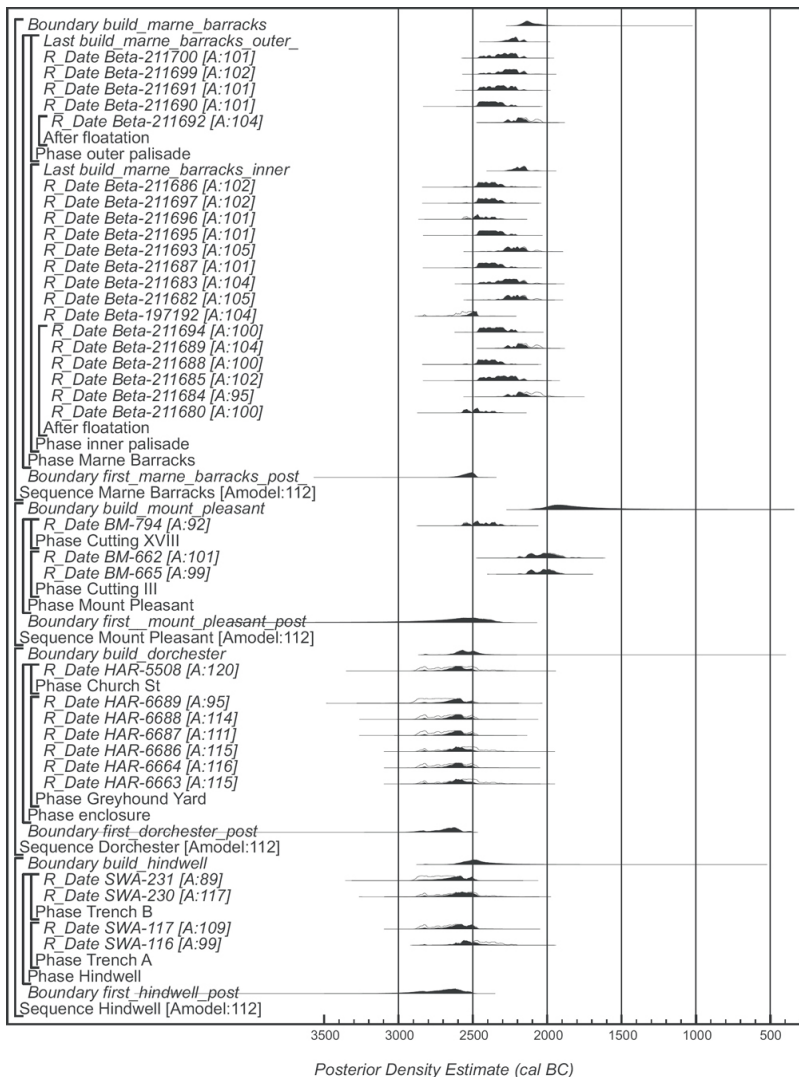
Figure 17.15. Key parameters for estimated dates of construction for selected middle Neolithic monuments in England. Distributions have been taken from the models defined in Figures 17.5 and 17.14, Whittle et al. (2011, figs 4.7–13, Hambledon Hill; fig. 4.48, Flagstones) and Marshall et al. (in prep. b, figs 7.1–4, Stonehenge).

Despite their close similarities in scale and form, discussion of West Kennet in relation to late Neolithic palisaded enclosures is now something of a red herring. It is clear that typology can be

extremely misleading. A model for the chronologies of palisaded enclosures in Britain is shown in Figures 17.16, a–b (based on data listed in [Table 17.3](#)) and [Figure 17.17](#). Constructions are estimated to be shortly after the latest dated palisade posts, with constraining dates on material from later activity being available at Meldon Bridge and Dunragit. It is clear that the palisades set within continuous ditches at West Kennet are not contemporary with similar continuous fence lines at Mount Pleasant and Marne Barracks (*contra* Noble and Brophy 2011, 75). Gibson (2002, 6) suggests that the Scottish sites, with closely spaced timber posts in pits, were the earliest form. This is clearly also not the case, unless the West Kennet examples are defined as something entirely different.⁶

Table 17.3. Radiocarbon and stable isotope measurements from selected English and Welsh palisaded enclosures.

Laboratory code	Sample and context	Radiocarbon Age (BP)	$\delta^{13}\text{C}$ (‰)
Hindwell, Ponds (Gibson 1999)			
SWA-116	Charcoal, oak, from outer rings of post 1 spit 3	3960±70	
SWA-117	Wood, oak, from outer rings of post 4 spit 3	4070±70	
SWA-230	Charcoal, oak, from outer rings of post 2, enclosure perimeter	4040±80	
SWA-231	Charcoal, oak, from outer rings of post 3, enclosure perimeter	4130±80	
Mount Pleasant, Dorset (Wainwright 1979)			
BM-794	Domestic animal bone, <i>Bos</i> sp. (R. Harcourt), from refilled cavity in palisade trench (pit XVI)	3956±45	
BM-665	Charcoal, <i>Quercus robur</i> (G.C. Morgan) from layer of ash in palisade trench	3645±43	
BM-662	Antler, <i>Cervus elaphus</i> L. (R. Harcourt) pick, from packing of palisade trench	3637±63	
Durchester, Greyhound Yard, Dorset (Woodward <i>et al.</i> 1993)			
HAR-6663	Antler, <i>Cervus elaphus</i> L., frontal bone and skull attached to antler, from layer 4947, the chalk ramp of post pit 4885	4020±80	-23.8
HAR-6664	Antler, <i>Cervus elaphus</i> L., base and shaft, mature and shed, from a primary deposit in postpits 4165, layer 4166, pit 4163	4070±70	-23.6
HAR-6686	Charcoal, <i>Quercus</i> sp., crushed and broken large timbers, from the infill on the outer edge of postpit layer 1648, pit 1635, postpits 1647	4020±80	-27.0
HAR-6687	Charcoal, <i>Quercus</i> sp., crushed and broken large timbers, from 'festoons' of charcoal along the edge of the inner postpits, layer 1649, pit 1635, postpits 1647	4090±70	-25.9
HAR-6688	Charcoal, <i>Quercus</i> sp., large timbers, from 'festoons' of charcoal in the lower postpits fill, layer 1653, pit 1631, postpits 1639	4080±70	-26.5
HAR-6689	Charcoal, <i>Quercus</i> sp., large timbers, from the fill of postpits 1642, layer 1642, pit 1631	4140±90	-26.3
Durchester, Church Street, Dorset (Woodward <i>et al.</i> 1993)			
HAR-5508	Charcoal, <i>Quercus</i> sp., from pit	4060±90	-26.5
Marne Barracks, North Yorkshire (Hale <i>et al.</i> 2009)			
<i>Inner palisade</i>			
Beta-197192	Charcoal, <i>Quercus</i> sp., outer rings of <i>in situ</i> outer post [394]	4030±40	
Beta-211680	Charcoal, <i>Quercus</i> sp., from outer post [511]	3900±40	
Beta-211682	Charcoal, <i>Quercus</i> sp., outer rings of <i>in situ</i> outer post [532]	3780±40	
Beta-211683	Charcoal, <i>Quercus</i> sp., outer rings of <i>in situ</i> inner post [334]	3810±50	
Beta-211684	Charcoal, <i>Quercus</i> sp., from inner post [560]	3730±50	
Beta-211685	Charcoal, <i>Quercus</i> sp., from inner post [566]	3840±50	
Beta-211687	Charcoal, <i>Quercus</i> sp., outer rings of <i>in situ</i> outer post [3578]	3900±40	
Beta-211688	Charcoal, <i>Quercus</i> sp., from outer post [5178]	3910±40	
Beta-211689	Charcoal, <i>Quercus</i> sp., from inner post [592]	3750±40	
Beta-211690	Charcoal, <i>Quercus</i> sp., outer rings of <i>in situ</i> inner post [610]	3780±40	
Beta-211694	Charcoal, <i>Quercus</i> sp., from outer post [616] of inner palisade	3870±40	
Beta-211695	Charcoal, <i>Quercus</i> sp., from outer post [697]	3890±40	
Beta-211696	Charcoal, <i>Quercus</i> sp., outer rings of <i>in situ</i> inner post [698]	3950±40	
Beta-211697	Charcoal, <i>Quercus</i> sp., outer rings of <i>in situ</i> inner post [709]	3910±40	
<i>Outer palisade</i>			
Beta-211686	Charcoal, <i>Quercus</i> sp., outer rings of <i>in situ</i> inner post [573]	3910±40	
Beta-211690	Charcoal, <i>Quercus</i> sp., outer rings of <i>in situ</i> outer post [596]	3890±40	
Beta-211691	Charcoal, <i>Quercus</i> sp., outer rings of <i>in situ</i> outer post [603]	3850±40	
Beta-211692	Charcoal, <i>Quercus</i> sp., from outer post [608]	3750±40	
Beta-211699	Charcoal, <i>Quercus</i> sp., outer rings of <i>in situ</i> outer post [751]	3810±40	
Beta-211700	Charcoal, <i>Quercus</i> sp., outer rings of <i>in situ</i> outer post [778]	3830±40	
Beta-211701	Charcoal, <i>Quercus</i> sp., outer rings of <i>in situ</i> post [850]	>46,000	
Dunraght (Thomas 2015)			
SUERC-2099	Charcoal, oak, well sealed in uppermost fill (010) of posthole	7535±35	-25.9
SUERC-2104	Charcoal, hazel, from fill (048) of large pit (050) near the innermost ring of the later Neolithic enclosure	4085±35	-26.3
SUERC-2106	Charcoal, hazel, from fill (004) of large pit (050) near the innermost ring of the later Neolithic enclosure	4055±35	-24.8
SUERC-2107	Carbonised hazel nutshell, from the basal fill (049) of a large pit 050 near the innermost ring of the Later Neolithic enclosure	4150±35	-29.3
SUERC-2108	Charcoal, hazel, from primary gravel fill (244) first-phase posthole of inner ring of later Neolithic enclosure	4025±35	-25.3
SUERC-2109	Charcoal, oak, from fill (048) of large pit (050) near the innermost ring of the later Neolithic enclosure	4025±35	-25.3
SUERC-36378	Bone, calcined (unidentified), from discrete cremation deposit (227) at base of secondary recut (217) within large posthole (215) forming part of the second inner palisade ring	4125±30	-24.4
Meldon Bridge (Burgess 1976; Speak and Burgess 1999)			
GU-1048	Charcoal, unidentified bulk sample, from the packing (LY77 L13.12) of a main posttrench post pit	3800±80	-26.2
HAR-796	Charcoal, unidentified bulk sample, from base of weathering cone B03 of timber post of large timber enclosure. The residue of the sample was identified as oak	4280±80	
HAR-797	Charcoal, unidentified bulk sample, from base of weathering cone D02 of timber post of large timber enclosure. The residue of the sample was identified as oak	4100±130	
SRR-648	Charcoal, unidentified bulk sample, from base of weathering cone B01 of timber post (LY 74 BF 14.0/B01) of large timber enclosure, formed after destruction of timber post in insertion pit B01	3730±70	
Forteviot (Noble and Brophy 2011)			
SUERC-21564	Charcoal, <i>Quercus</i> , non-heartwood, from context 159/066	4155±40	-25.2±0.2
SUERC-21565	Charcoal, <i>Quercus</i> , non-heartwood, from context 150/058	4250±40	-25.9±0.2
SUERC-21570	Charcoal, <i>Quercus</i> , non-heartwood, from context 121/SF061	3965±40	-25.7±0.2
SUERC-21571	Charcoal, <i>Quercus</i> , non-heartwood, from context 118/SF051	4065±40	-26.2±0.2
SUERC-21572	Charcoal, <i>Quercus</i> , non-heartwood, from context 103/050	4140±40	-24.2±0.2
SUERC-21573	Charcoal, <i>Quercus</i> , non-heartwood, from context 032/053	4025±40	-24.7±0.2
SUERC-21574	Charcoal, <i>Quercus</i> , non-heartwood, from context 044/043	4065±40	-25.8±0.2
SUERC-21575	Charcoal, <i>Quercus</i> , non-heartwood, from context 112/SF020	4070±40	-25.8±0.2
Blackhouse Burn (Lelong and Pollard 1998)			
GU-1983	Waterlogged wood, <i>Quercus</i> , outer heartwood, from posthole 140	4035±55	-25.3



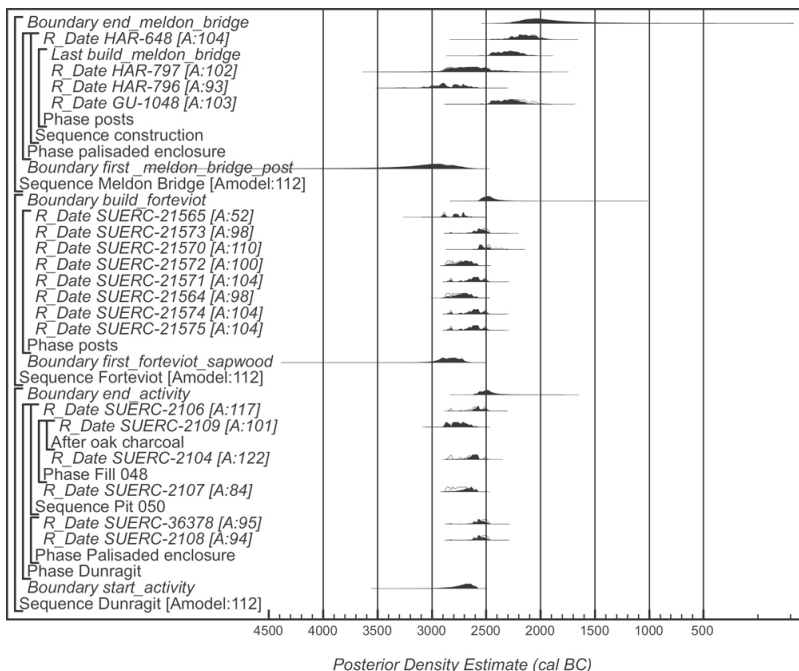


Figure 17.16 a–b. Probability distributions of dates from other palisade enclosures in Britain. The format is identical to that of Figure 17.3.

Conclusions

The radiocarbon dating and chronological modelling on samples from Alasdair's excavations at the West Kennet palisaded enclosures was undertaken in the expectation of providing more precise timings for their construction and destruction. Unexpectedly our new dating not only demonstrates that the palisaded enclosures are some 800 years earlier than was originally thought, but re-dating of the palisades has demanded a new explanation for the large assemblages of late Neolithic material recovered from the site. Close reading of the excavation report and the site archive suggests that the Grooved Ware and associated finds were part of an extensive settlement that may have been the 'worker's camp' for Silbury Hill.

It is salutary to reflect that, had the charcoal samples from the

1990s excavations not been carefully preserved by the British Museum or if the palisades had not been destroyed by fire, our site narrative would have been very different and largely in error.

It is a tribute to Alasdair's careful excavations at West Kennet and their prompt and thorough publication that we have been able to propose such a fundamental re-thinking of the site without new fieldwork. On the one hand, this exercise demonstrates the potential of past archives of even very limited interventions (well under 1% of the palisaded enclosures have been excavated); on the other hand, we suspect that without the larger-scale excavations that have recently been undertaken at Durrington Walls and Marden (which have told us what a Grooved Ware house in southern Britain looks like), we would have interpreted the late Neolithic finds from West Kennet simply as a spread of occupation debris.

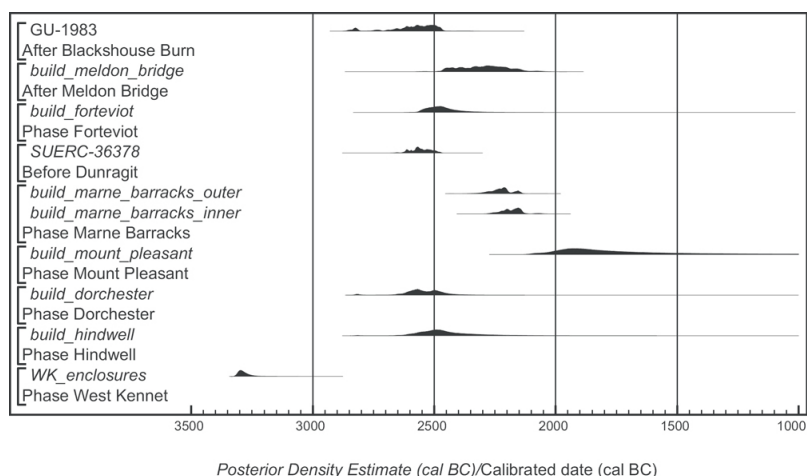


Figure 17.17. Key parameters for palisaded enclosures in Britain, derived from the models defined in Figures 17.3 and 17.16a–b (note that some of the tails of these distributions have been truncated to enable detailed examination of the highest area of probability).

As we were writing this paper, wrapping our new chronologies in their archaeological context, we were conscious of how much

more eloquent Alasdair's arguments would have been, and how much enjoyment and stimulation he would have gained from having to rewrite his *prior beliefs* completely!

Acknowledgements

Ros Cleal and the trustees of the Alexander Keiller Museum, Avebury, kindly gave us permission to sample the collection, and Ros and Michele Drisse facilitated access to the site archive. Paul Halsted kindly tracked down copies of the MSc theses undertaken on the animal bones from palisade enclosure 1 (Alice Edwards) and palisade enclosure 2 (Martin Horne) at Sheffield University in 1994. Sharon Soutar drew [Figure 17.2](#) and Frances Healy kindly commented on an early draft of this paper. The project was funded by Historic England.

Notes

1

All stable isotopic ratios reported in this paper were measured by Isotope Ratio Mass Spectrometry (IRMS).

2

This date range is more compatible with the expected dating of the associated Grooved Ware (Barclay *et al.* 2011, 178–81) than that suggested by Healy (2016).

3

It should be noted that OxA-10945–9 were prepared using the original ultrafiltration protocol used by the Oxford Radiocarbon Accelerator Unit (Bronk Ramsey *et al.* 2000), which was subsequently shown to produce ages that could be slightly too old (Bronk Ramsey *et al.* 2004). We have thus incorporated these measurements in the model as *termini post quos* only, using the AFTER function of OxCal.

4

Series of luminescence ages from the Eynesbury and Stanwell C1 cursus ditches are not included in this model, as they appear

problematic for technical reasons (Lewis *et al.* 2010, 34; Whittle *et al.* 2011, 285–6); similarly, the radiocarbon dates from the Raunds long mound are not included, as the taphonomy of the dated material from this site is extremely problematic (Whittle *et al.* 2011, 301–3).

5

Although bedevilled by a plethora of radiocarbon dates on samples of charcoal from long-lived species (or unidentified charcoal), analogous constructions in Scotland are probably earlier than the examples from southern Britain (Whittle *et al.* 2011, fig. 14.170).

6

We note here the existence of palisade enclosures of similar form from Denmark attributed to the Funnel Beaker Culture, and thus also probably dating to the last centuries of the fourth millennium cal BC (Brink 2014).

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conviviality after much hard work...

Remembered and imagined belongings: Stonehenge in the age of first metals

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Introduction

Alasdair is first and foremost a scholar of the Neolithic, so an offering for his *festschrift* on events from the later third and second millennium BC demands explanation. So, to follow good legal defence, one can first cite precedence. Alasdair's research has, on occasion, strayed into later periods. Early on this was determined by post-doctoral employment, as with his analysis of the Iron Age pits from Danebury (Whittle 1984), or the writing up and publication with Humphrey Case of a range of later prehistoric and Roman excavations on the Thames Valley gravels around

Oxford (Case and Whittle 1982). But even his Cardiff days have seen involvement in projects that took in later archaeology, work on the Severn foreshore being a case in hand (Whittle 1989). The second part of our defence involves a sleight of hand, in that this paper deals with aspects of the life of that most pre-eminent of Neolithic monuments, Stonehenge, albeit in the time of first metals. Bradley has highlighted how the sequence of constructional events at this monument presented an image of timeless order in the face of external change (Bradley 1991), and so even in the Bronze Age it might be fair to say Stonehenge carried with it many of the core concepts of a 'Neolithic' world.

Stonehenge has not escaped Alasdair's attention. The shifting influence of Beaker assemblages and practices within its landscape provides a case study within his critical review in 1981 of late Neolithic society (Whittle 1981). In his 1997 paper, 'Remembered and imagined belongings', Alasdair sought to ascribe meanings to Stonehenge's main lithic phase (phase 3ii of Cleal *et al.* 1995; phase 2 in the revised sequence of Darvill *et al.* 2012). With its focus on understanding the power of tradition, reverence for spirits and ancestral beings, intense ceremonialism, the metaphoric and metonymic qualities of materials, encounter and experience, this remains one of the most insightful and dynamic readings of the monument. It was prescient in several ways, not least in drawing attention to the monument's role as a 'fixed point for the residence of or access to spirits and ancestors, real and imagined' (Whittle 1997, 147), and in being explicit about the links between Stonehenge and contemporary monumental timber constructions, notably the Durrington Walls Southern Circle. Albeit worked from a model shaped by ethnographic analogy published by Mike Parker Pearson and Ramilisonina (1998) a year later, these are themes that lay at the heart of the programme of investigation instigated by the Stonehenge Riverside Project (Parker Pearson 2012; Parker Pearson *et al.* 2006; 2007; 2009). The last two decades have witnessed a remarkable up-scaling in

the pace of Stonehenge research and a concordant expansion of knowledge, not least through the work of the Stonehenge Riverside Project, that of SPACES (Darvill and Wainwright 2009), and detailed survey work inside and outside the monument by English Heritage/Historic England (Bowden *et al.* 2015; Field *et al.* 2014; 2015) and international teams (Darvill *et al.* 2013; Gaffney *et al.* 2012). Many elements of Alasdair's interpretation of the monument continue to resonate within these programmes of work, and that is true as much of later events as of Stonehenge's Neolithic heyday, as we wish to show through a fresh look at events within the period c. 2400–1500 cal BC.

Stonehenge in the Bronze Age

When Alasdair took up post at the then University College, Cardiff, the great sarsen and bluestone circles of Stonehenge were understood to date to the early Bronze Age. The detail of chronology and sequence had been established by his senior colleague, Richard Atkinson, through an extensive programme of excavation at the monument during the 1950s and 1960s (Atkinson 1960). Atkinson's phase II of Stonehenge, with its double bluestone circles, was seen as contemporary with Bell Beaker pottery, while the sarsen and re-set bluestone components of phase IIIa went with the rich Wessex Culture graves of nearby barrow cemeteries, and so the established early Bronze Age (Atkinson 1960, 90–1).¹ At the time, this early Bronze Age chronology had an internal logic. For Atkinson, only the widely networked 'aristocratic community' represented by the elaborately furnished graves in adjacent Bronze Age round barrow cemeteries (including the famous Bush Barrow burial: Needham *et al.* 2010) 'commanded the resources of labour and craftsmanship necessary to encompass the transport and erection of the sarsen stones' (Atkinson 1960, 91). Further confirmation of the second millennium BC date of the lintelled sarsen circle and trilithon

horseshoe was seen to come from the discovery in 1953 of carvings representing bronze axeheads and even a dagger of 'Mycenaean type' on the sarsen uprights of the outer circle and inner trilithons.²

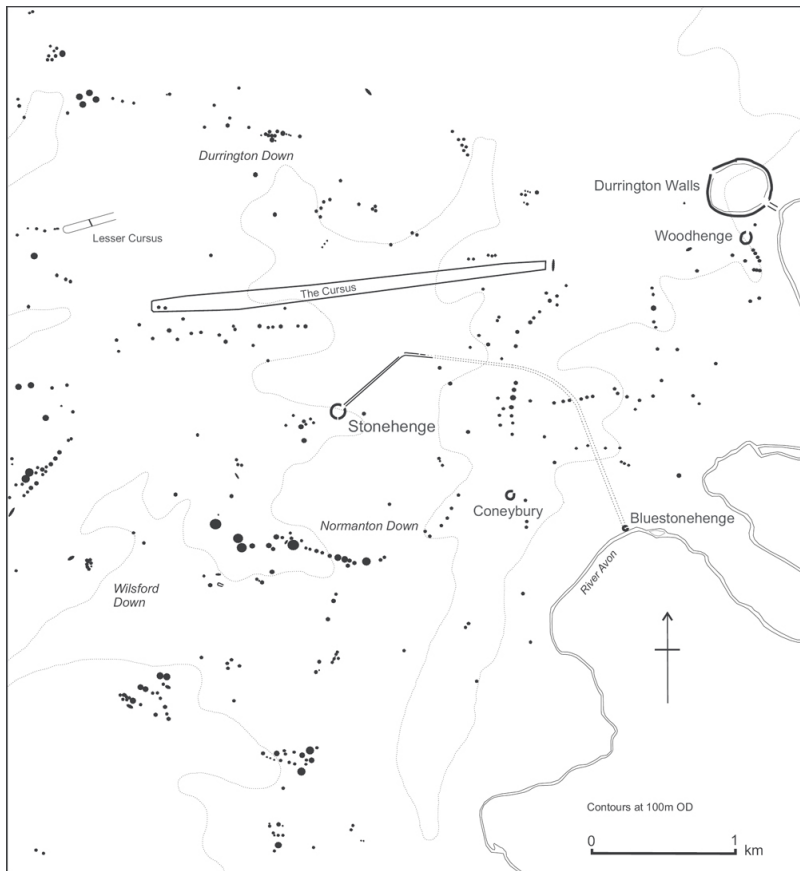


Figure 18.1. Stonehenge and its landscape.

By the time of a new programme of analysis and dating during the mid 1990s – linked to the full publication of the twentieth-century excavations of Colonel Hawley and Richard Atkinson (Cleal *et al.* 1995) – Atkinson's chronology was already beginning to look untenable. First had been the impact of the radiocarbon calibration 'revolution' of the late 1960s to early 1970s (Renfrew

1973), which made any talk of Mycenaean contacts, or even Mycenaean architects being involved in the building of the stone phase of the monument, chronologically challenging (Renfrew 1968). The new radiocarbon dates published in the definitive report by Cleal *et al.* (1995) demonstrated conclusively that the major megalithic phase belonged to the final part of the local Neolithic sequence, centring on the middle centuries of the third millennium cal BC. This radically changed the Stonehenge story, firmly placing much of the monument's construction and active life within a late Neolithic world, and demonstrating that those buried in surrounding round barrows had looked upon Stonehenge as a monument already ancient.

Since the mid-1990s there has been substantial further work and refinement. The radiocarbon chronology and structural sequence have been subject to further analysis (Darvill *et al.* 2012; Parker Pearson *et al.* 2007), while work by the Stonehenge Riverside and SPACES projects has provided important new detail relating both to the monument and events in the surrounding landscape (Fig. 18.1). It now appears likely that the smaller bluestones that make up horseshoe and circle settings within and between the larger sarsen trilithons and outer circle may have first been brought to Stonehenge close to 3000 cal BC from a south Welsh source 270km distant (Parker Pearson *et al.* 2015). A smaller circle of bluestones was erected at the same time or rather later adjacent to the River Avon 2km to the south-east at Bluestonehenge. From this point until the middle of the third millennium cal BC, Stonehenge acted as a large cremation cemetery, possibly for individuals of a pre-eminent lineage that traced its ancestry through real or fictive lines to early Neolithic communities of south-west Wales (Parker Pearson *et al.* 2009; Willis *et al.* 2016). However, the most dramatic transformation of what was already a remarkable monument occurred around 2500 cal BC (Stage 2), when the large sarsens were brought from the Marlborough Downs 30km to the north, dressed, and erected to

form the lintelled outer circle and inner trilithon horseshoe settings that provide the iconic image of Stonehenge. At this stage the bluestones from both the earlier surrounding Aubrey Holes and Bluestonehenge were reset as a double circle inside the sarsen circle. One possibility is that the whole was built from inside to out in quick succession – sarsen trilithon horseshoe; double bluestone circle; and outer sarsen circle; with the recumbent sandstone ‘Altar Stone’ at the near centre.

The resulting monument was unique, at least as far as megalithic structures are concerned. Its architecture copied the format of contemporary timber circles such as those to the east on the Avon riverside at Durrington Walls and Woodhenge, which in turn may be seen as massively elaborated versions of late Neolithic houses (Bradley 2005; Pollard 2009). Stonehenge had been remodelled as the ‘great house’ or hall of a pre-eminent ancestral community. The monument formed the focus of a wider late Neolithic ‘ceremonial’ landscape. For a period of time around 2500 cal BC, the Stonehenge-Bluestonehenge-Durrington-Woodhenge complex was the setting for ceremonies surrounding the translation of the newly dead into ancestors (Parker Pearson and Ramilisonina 1998). The timber monuments at Durrington Walls and Woodhenge were the locations for periodic gathering and feasting, timed to coincide with the winter solstice (Craig *et al.* 2015), while the lithic settings at Stonehenge and Bluestonehenge retained a close association with funerary and ancestral domains (Parker Pearson 2012).

Times they are a’ changing

By the time of Stage 2 the wider world was beginning to change. The British late Neolithic was curiously insular, if, surprisingly, internally culturally homogeneous (Thomas 2010). Stonehenge Stage 2 belonged to a British Isles-wide tradition of major circular monuments built of stone and timber, some enclosed in circular

'henge' earthworks, linked to distinctive forms of ceramic known as Grooved Ware and economies reliant to varying degrees on pastoralism (Stevens and Fuller 2012). However, the decades around 2500 cal BC witnessed the re-establishment of sustained contacts with continental Europe, brought about through the expansive networks linked to the Bell Beaker phenomenon. Marking the time of the first metals, British prehistorians are increasingly recognising this horizon (c. 2450–2200 cal BC) as a distinct 'Chalcolithic' (Allen *et al.* 2012). Initially, changes in material culture (the introduction of metals and textiles, a change from Grooved Ware to Beakers, etc.), burial practice (a move towards individual inhumation), subsistence (greater reliance on cereal cultivation) and so forth were gradual (Needham 2005). The earliest Beaker presence in the Stonehenge landscape was thinly distributed and not closely clustered around the monument (see Whittle 1981 for an early appreciation of this pattern). The now well-publicised burials of the Amesbury Archer and Boscombe Bowmen, several of whom began their lives well outside the region, and who date to the twenty-fourth and twenty-third centuries cal BC, are located c. 5km from Stonehenge on the opposite side of the River Avon (Fitzpatrick 2011). They have no especial claim to be linked to the monument, beyond the 'draw' that Stonehenge may have exerted on pilgrims or travellers to visit the region. Other early burials are likewise widely scattered in the locality. At least one other early Beaker burial comes from the largest Beaker cemetery in the region, under and around the round barrow Wilsford G1. At least 15 individuals, including seven infants, were buried here (Leivers and Moore 2008). While located just 1.3km to the west-south-west of Stonehenge, the cemetery lies beyond that monument's visual envelope – again, a cautious presence. Sherds of early Beaker are found in only small numbers at Stonehenge, Durrington Walls and Woodhenge (Cleal and Pollard 2012).

In the centuries following the major rebuilding represented by

the late Neolithic Stage 2, Stonehenge would undergo further modification. This was never on the same scale, yet its very occurrence testifies to the continuing role the monument played in the ceremonial life of communities both within southern Britain and further afield. While it is always tempting to equate scale of constructional activity with relative levels of ceremonial/sacred significance – such that the massively labour-intensive Stage 2 comes to represent the pinnacle of the site's status, followed thereafter by more minor structural modifications marking a slow decline in that significance – this may be erroneous. As Needham *et al.* (2010, 4) point out, 'there are good grounds for believing that the monument was still of critical religious importance to the communities of the mature Early Bronze Age'. Later third and early second millennium BC transformations of the earthwork and stone settings were enough to episodically reanimate and reinstate the site's preeminent sacred role, yet not so drastic that the fundamental form of the Stage 2 sarsen and bluestone monument was lost. The implication is that a certain historic potency and/or recognisability (a 'sacred brand', if you like) became attached to the sarsen outer circle and inner trilithons, making their removal or substantive modification an unthinkable act.

Within the monument. Chalcolithic and early Bronze Age modification and activity

Several episodes of constructional modification have been defined as belonging to the period 2400–1450 cal BC (Cleal *et al.* 1995; Darvill *et al.* 2012). It is important to recognise not just the character and significance of events at the monument itself, but those taking place within the local landscape and beyond. As Richard Bradley has eloquently described, there is a certain tension between the strands of continuity seen at Stonehenge itself and the major material and ideological transformations taking place in the world around it. No more dramatic illustration is

provided than by the appearance of the numerous cemeteries of round barrows (over 670 barrows in total: Darvill 2006, 164) that gradually came to ring the monument over the period 2200–1500 BC (Woodward and Woodward 1996). These served to articulate inter-group relationships, sanction claims of access to areas of landscape (and the monument itself) and symbolise the inter-generational success of certain lineages (Garwood 2007). Bradley suggests that the tension between apparent continuity at the monument and major changes in its environs was mediated through different projections of time within separate spheres of practice (Bradley 1991; 1998). A mundane time of the world around operated alongside a ritual time that emphasised repetition and continuity in the sacred that was embodied by Stonehenge. Of course, such a distinction in ‘types’ of time was likely situational rather than absolute, and we might, too, envisage other forms of conceptualising temporal frameworks, especially related to successive barrow burial and lineage formation.

The latest iteration of Stonehenge’s sequence prepared by Darvill *et al.* (2012) identifies three stages (3–5) belonging to the Chalcolithic and early Bronze Age. Together they span c. 900 years, or c. 36 generations, which might usefully be compared with the c. 600 years or c. 24 generations of construction and activity leading up to stage 3.

Stage 3 (2405–2225 to 2300–2100 cal BC)

Stage 3 belongs to the currency of early Beakers (Fig. 18.2). During this time the stone settings at Bluestonehenge by the River Avon were dismantled and probably taken to Stonehenge where they were set up as a central circle enclosing the Altar Stone. The process added an extra layer to the heart of the monument, and in plan at least it came to resemble more closely the great multiple timber circles at Woodhenge and the Southern Circle, Durrington Walls (Cunnington 1929; Thomas 2007; Wainwright and

Longworth 1971). Other modifications included the removal of two of three Stage 2 sarsens at the main north-east entrance; the re-cutting of the earthwork ditch; and the creation of the bank and ditch of the Avenue, linking Stonehenge to the site of Bluestonehenge and the Avon at West Amesbury, 2.8km to the south-east. At around the same time, the sites of the circle at Bluestonehenge and of the erstwhile timber rings of Woodhenge were enclosed by henge earthworks (Pollard and Robinson 2007). All of these activities were bound up in the marking or enclosing of locations and routeways of existing significance, and can productively be viewed as processes of ‘wrapping’ potent media (Richards 2013, 16–23), both responding to and enhancing their sacredness, and reinforcing the ontological contrast between these spaces and the landscape outside.

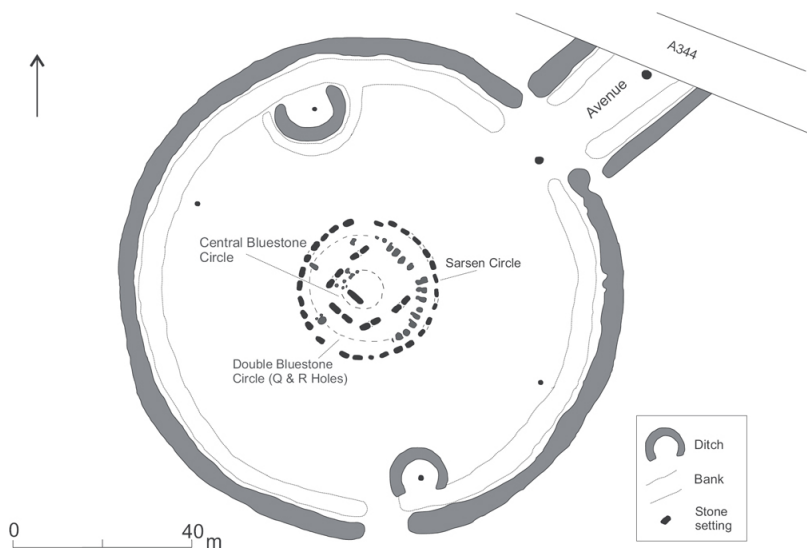


Figure 18.2. Principal features of Stonehenge Stage 3 (after Darvill et al. 2012).

Stage 4 (2210–2030 to 2160–1925 cal BC)

The next major transformation occurs in the last two centuries of the third millennium cal BC, and again involves the bluestones

(Fig. 18.3). The double circle of Stage 2 and central circle of Stage 3 were dismantled and reset as a dolerite oval within the trilithon horseshoe (2205–1920 cal BC) and as a circle of 40–60 close-set pillars between the horseshoe and outer sarsen circle (2275–2030 cal BC).

Human burials ceased to be placed within the monument, and Stonehenge's dead were now becoming a metaphysical rather than physical presence. The remains of the newly-dead were now inhabiting the landscape outside the monument. A number of Beaker barrows provided the focus for the emergence post-1900 BC (Garwood 2007) of sometimes extensive linear barrow cemeteries. The immediate viewshed from Stonehenge is ringed by three of the most important of these – the King Barrows to the east, the Cursus group to the north-west and Normanton Down to the south (Cleal *et al.* 1995, 34–7). The shift away from burial in the monument fits into a wider trend, and perhaps reflects a greater imperative to use the dead as a resource for making visible statements about access to and rights of tenure over blocks of land. This shift may increasingly have marked Stonehenge as a monument redolent of a sacred authority invested in a deep ancestral past.

Stage 5 (2010–1745 to 1620–1450 cal BC)

The final substantive modifications to Stonehenge (other than later depredations) took place during the established early Bronze Age, at a time when the region's round barrow cemeteries were well established (Fig. 18.4). So far as we are aware, changes to the monument's fabric during this time did not involve the resetting of stones. Rather, two rings of oval and sub-rectangular pits were dug enclosing the stone settings. Known as the Y and Z Holes, these are among the most perplexing of the monument's features. Dates suggest the inner Z Holes were created first, in the period 2030–1750 cal BC (Cleal *et al.* 1995, 264); with the Y Holes belonging to

1640–1520 cal BC (Cleal *et al.* 1995, 260–4, 533). Their similarity in form and dimension, and their paired arrangement, is remarkable if their creation is truly separated by c. 100–500 years. However, the irregularity in plan and section of several of the Y Holes (e.g. YH1, 4, 7, 16 and 29) suggests they cut earlier features set out on the same circuit, so available dates may relate to their reworking rather than initial creation. As Richards (2013, 20) astutely observes, ‘tradition is strong and critical thought weak in the extraordinary interpretation of ... the Z and Y Holes’.

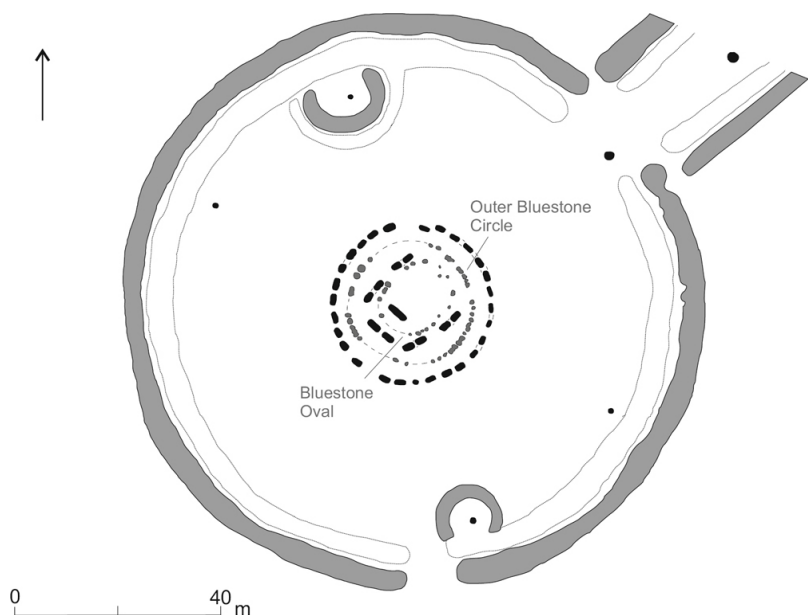


Figure 18.3. Principal features of Stonehenge Stage 4 (after Darvill et al. 2012).

The end of burial, and small things forgotten

Alongside the periodic movement and re-erection of stones, later the digging of rings of pits, were other practices that saw engagements with substances, both physical and metaphysical, within the space of the monument. These highlight a certain

motion, vibrancy, or life to Stonehenge during this time that makes it reasonable to infer its conceptualisation as an animate form rather than inert memorial. There is also both retained unity (Stonehenge as icon) and significant shifts in the way the monument, people and things interacted: notably, a move away from the incorporation of human remains post-2200 cal BC to the deposition of ceramics, the creation of rock art, the felling, fragmentation and distribution of certain stones and the establishment, or rather reinforcement, of a second solstitial axis that took in the midwinter sunrise. As we shall show, many of these practices served to reference or even co-opt features of other monuments, some contemporary, others increasingly ancient. Through this, Stonehenge became an ever more powerful repository of presence.

It is during Stage 3 that Stonehenge's long-standing role as a locus for human burial comes to an end, but in rather dramatic fashion. The latest identified interment is of an adult male killed by multiple arrowshots, placed in a grave cut into the ditch just to the north-west of the main entrance (dated to 2340–2195 cal BC; Evans 1984). A second, disturbed, burial in the centre of the monument may be of this date since sherds of fine Beaker were found in loose association (Cleal *et al.* 1995, 265), but the evidence remains sketchy at best. The burial of the adult male within the ditch remains an ill-understood event, especially since the violent end to this individual's life could imply sacrifice or over-kill. His interment against the principal entrance certainly implies an elevated status, either in life or as an object of offering. Rarely commented on are other instances of single burial, of adolescents and adults, of comparable date and context from the henge monuments at Avebury (southern entrance: Gray 1935), Marden (north entrance: Wainwright 1971) and Wilsford (Jim Leary *pers. comm.*). These individuals were also interred in the terminals of ditches flanking major entrances, and represent one-off acts rather than foundational events for new sequences of

burial. It is tempting to see them as related. Perhaps quite public affairs, and located at key points of transition between enclosed sacred spaces and the world beyond, each burial formed an act that created a heightened sense of incorporated memory (cf. Rowlands 1993). We suggest they were intended to effect a transformation, conceivably relating to the ontological status of each monument, as a form of consecration or re-dedication, if such terms are appropriate. That at Stonehenge belongs to a critical horizon where Beaker-related cultural practices were becoming more assertive (Needham 2005), and its enactment may have served to mediate and facilitate new kinds of engagement with a monument deeply rooted in an old order. From this point on there are certainly changes in activity reflective of new forms of materiality, seen most conspicuously in the beginning of a long tradition of ceramic deposition, manipulation of bluestone and, rather later, the creation of carvings of axes and daggers.

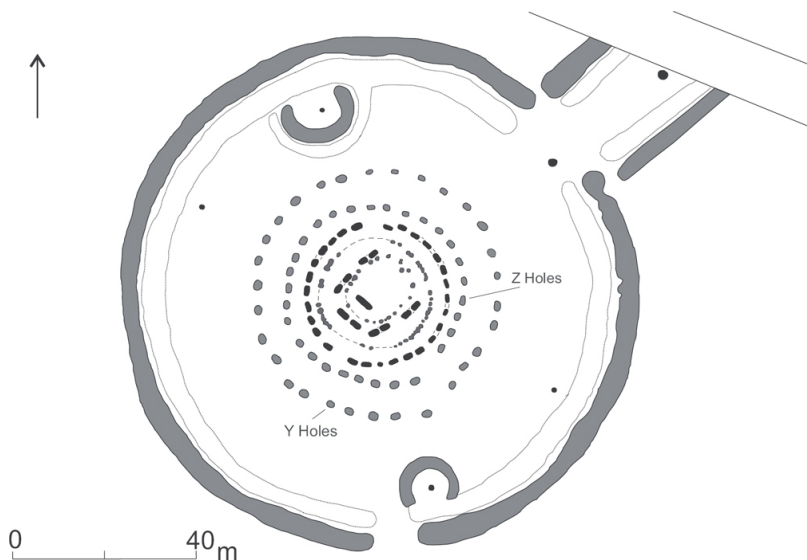


Figure 18.4. Principal features of Stonehenge Stage 5 (after Darvill et al. 2012).

Pots and bluestones

For the first six or seven centuries of its life, little ceramic material was deposited at Stonehenge (Cleal *et al.* 1995, 350–3). This is in stark contrast to the quantities of later Neolithic Grooved Ware found in the contemporary monuments of Woodhenge and Durrington Walls, suggesting that it was simply inappropriate to utilise and deposit pottery (which at this time lacked a funerary association) at a monument connected to the dead (Parker Pearson and Ramilisonina 1998). Beaker and early Bronze Age ceramics (Food Vessels, Collared Urns, etc.) were deployed in a broader range of practices, which included their use in domestic domains and as vessels to accompany or act as containers for the deceased. This shift in their currency now made their use within the monument possible, perhaps as components of rites associated with ancestral veneration or funerary commemoration. Certainly their deployment was structured or prescribed. The distribution of Beaker and early Bronze Age urn sherds is far from random, and picks out significant axes within the monument (Fig. 18.5). The main concentration occurs around the north-east (i.e. front/entrance) of the stone settings (cuttings C2 and C12), with secondary concentrations within the south-eastern area of the stone settings between the outer bluestone circle and sarsen circle, and within the eastern sector of the ditch where a wide gap currently exists in the bank. Tellingly, pottery is absent from that part of the western interior investigated through excavation.

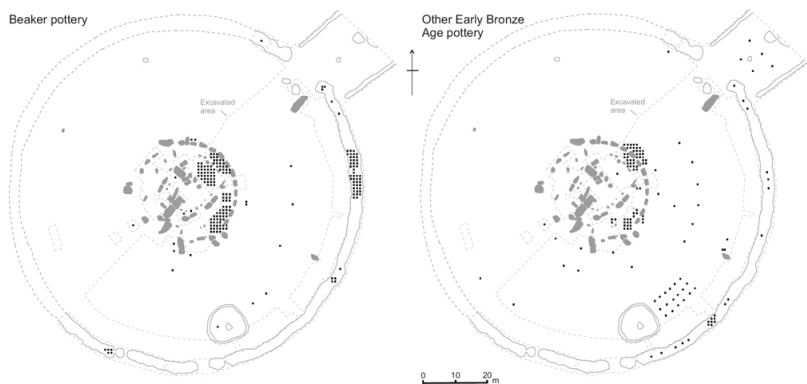


Figure 18.5. The distribution of Beaker and early Bronze Age ceramics within Stonehenge

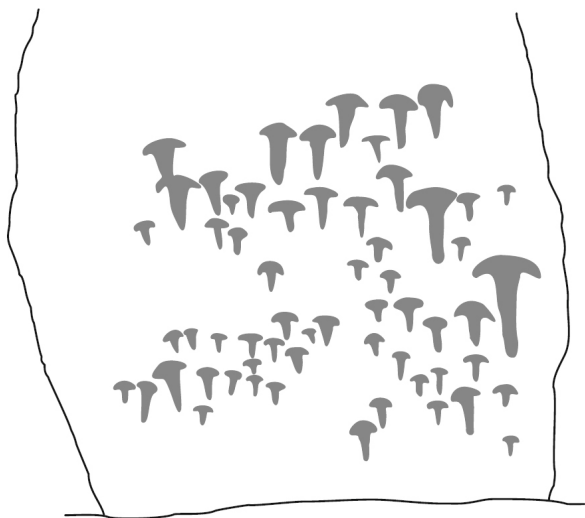
It remains unclear whether pottery was brought in as complete vessels or as sherds. Elsewhere there is evidence of Beakers being deposited on Neolithic monuments as fragments following potentially complex pre-depositional treatment (Wilkin 2016), and this may be true of Stonehenge. If so, they were not the only fragmentary things in action. Around the same time that ceramic depositions were taking place there are indications of certain bluestones being intentionally broken and the fragments variously circulated around the landscape and used to create stone tools (Montague in Cleal *et al.* 1995, 375–86). The motivations behind this are unclear, though need not imply disrespect, nor that the monument's power and importance was faltering, since pieces of bluestone may have been sought for their perceived efficacy generated by association with the monument or their own inherent power. Some of those distributed fragments come from areas of contemporary settlement, such as the zone around the western end and to the north of the Cursus (Richards 1990, 230–1; Stone 1947, 17). One could think of scenarios in which fragments of pots and fragments of stones circulated into and out of the monument, respectively, operating within a cycle of enchainment (Chapman 2000). In this way the monument was connected to places of the living (and even specific people or communities), and

pieces of the lived world were brought back into Stonehenge. That cycling and ultimate consumption or absorption of materials through deposition could work into deeper metaphoric ideas of transformation and regeneration, of people and substances, in much the same way as Brück (2006) has argued for the middle and late Bronze Age. Potential exists to see these material practices as a component or extension of funerary rites taking place elsewhere in the landscape, with pottery sherds acting as tokens of the recently deceased which were ‘enshrined’ within a monument whose connection with the dead remained strong.

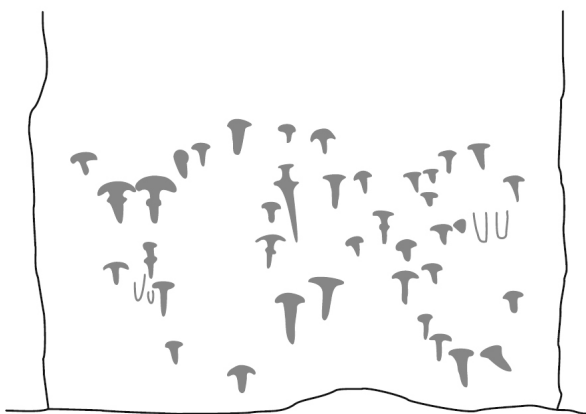
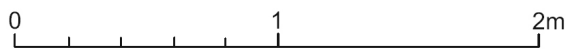
The axehead and dagger carvings

While fragments of physical objects were deposited around the megalithic settings, images of others were worked on the surfaces of stones. They are among the more unusual features of this striking monument (Fig. 18.6). Representations of around 115 metal axeheads and three daggers were carved onto the outer faces of stones 3, 4 and 5 of the outer circle and the inner face of stone 53 of the trilithon horseshoe, while a single dagger is present on the south-west face of Stone 23 (Lawson and Walker in Cleal *et al.* 1995, 30–3; Field *et al.* 2015, 141). The greatest concentrations are on stone 4 (a minimum of 60 axes) and stone 53 (a minimum of 37 axes, plus two daggers). All the axeheads are shown unhafted, while the daggers have hilts; a distinction which must have significance. If accurate representations (which many are clearly not), the axes are typologically of Arretton Down type, dating to 1750–1500 cal BC, and so Stage 5. Such carvings are exceptionally rare in a British Bronze Age context, and the few parallels that are known (from cist slabs near Kilmartin, Argyll, and on a sandstone block from the Badbury Barrow, Dorset) have explicit funerary associations (Lawson and Walker in Cleal *et al.* 1995, 33). A connection with mortuary rites might be further reinforced by the aspect of the carvings, which face out towards

Amesbury 11 and the mounds on King Barrow Ridge (Field *et al.* 2015, 141); though this is a rather ‘target heavy’ landscape when it comes to barrows and so this apparent relationship may not hold significance.



Stone 4



Stone 53

Figure 18.6. Axe and dagger carvings on stones 4 and 53 (after Bowden et al. 2015; Field et al. 2015).

While connections exist with carvings on cist slabs, those on Stonehenge remain unique in terms of their sheer number and association with a major ceremonial monument. Not only is their presence highly unusual, but their position on the stones would be odd if the intention was simply for them to act as visible symbols within a conventional representational reading. Many are worked very low down on the face of the stones, some almost at ground level, in a position that must have been awkward to effect. The carvings on stone 53 extend from close to ground level to a height of c. 1.2m, and those on stone 4 up to 1.6m, a good proportion being below waist level. Set blade up, the impression given is of the axeheads *emerging* out of the ground. Those on stones 3–5 look to work as a single, domed, composition. Within each ‘panel’ the axeheads describe diagonal lines or arcs, while some multiples (for example on the lower left and right of stone 4) are clustered as if in groups or sets. There is a sense of relational connections being established between individual images, much the same way as they might with people in lineages, animals in herds, beads in necklaces, or barrows in cemeteries, for instance. Or, as in axe hoards. Subtle yet potentially significant differences also exist in the form of images according to their location, such that larger axeheads are present on stone 4 and ones with medial projections on stone 53. An obvious conclusion is that the images are multi-authored, and potentially accretive, though this is impossible to establish.

As with all unique or near-unique phenomena in prehistory, their interpretation is taxing. One line of explanation would see them as tallies of sorts, marking major funerary or ancestral ceremonies held at the monument, perhaps with dagger images indexing events of a more significant or different order. Or they could be a proxy for labour and participation, especially in the

light of the evidence for around 51 axes (and so people?) being used in the construction of the early Bronze Age timber circle at Holme-next-the-sea, Norfolk (Brennand and Taylor 2003, 22). Pitts (2000, 297–8) suggested female and male links for the axeheads and daggers, and a connection to powerful, even deified, people. This leads to another conclusion that takes into account their unusual positioning, namely that they allude to a process of emergence – of entities rising out of the ground from an underworld. This could play on a broader emic conception that linked the forces behind the production of metalwork with non-human agencies and qualities of transformation, regeneration and durability held in common with spirit worlds (cf. Budd and Taylor 1995). Could we think of the carvings as axe/spirits, human spirits as axes, or even the spirits of axes?

Rings of pits and solstitial alignments

Both the circulation and deposition of pottery and pieces of bluestone, and the creation of the axehead and dagger carvings, materialised connections and afforded ways in which the monument remained an animate entity – the powerful and potent focal point which held this landscape together and provided its renown. So far we have dealt with small things and small acts, yet these are set against larger-scale transformations within the monument and the surrounding landscape. Scaling up, we will look first at the monument and the creation of the Y and Z Holes and changes made to work in a better defined axis that took in the midwinter sunrise.

The Y and Z Holes represent the last major structural transformation of the monument, aside from later depredations. The two rings of sub-rectangular pits, set in circles of 38m (Z) and 53m (Y) diameter, enclose the earlier stone settings. Darvill *et al.* (2012, 1038) suggest that some or all of the holes held small stones that were subsequently removed, but while the shape of the

holes is consistent with such a function, they lack clear traces of having held megaliths (e.g. remnant packing collapsed back into their fills). Fragments of rhyolite and occasional dolerite and sarsen were recovered from their bases and primary fills, leading Richard Atkinson (1960, 84) to consider these stone fragments ‘as propitiatory token offerings, made as symbolic substitutes for the bluestones themselves’. Pitts draws attention to their grave-like shape and combines the evidence of Y and Z Holes, axehead and dagger carvings and the nearby Bush Barrow burial to suggest Stonehenge had become ‘an extraordinary version of something everyday, the burial mound’ – the symbolic tomb of a ‘god’ ‘enclosed by two rings of thirty graves’ (Pitts 2000, 297).

It may be better to consider their overall effect rather than individual feature function. In Richards’ words, their creation served to ‘*unify* the diversity displayed in the inner skins [of stone]’ (Richards 2013, 20). That process of unification extends to the striking spatial relationship the Y and Z Holes hold with the sarsens of the outer circle. They are positioned in such a way that they are paired, albeit occasionally erratically, with stones of the circle. Further ‘wrapping’ the sarsen and bluestone settings, the addition of the Y and Z Holes takes the number of rings forming the monument to six – bluestone oval, trilithon horseshoe, bluestone circle, sarsen circle, Z Holes and Y Holes – replicating the six-ring format seen with the earlier timber monuments of Woodhenge and the Southern Circle (Cunnington 1929; Thomas 2007). Connections with these monuments, which had been there from phase 2, were still actively evoked at this stage. Significantly, the postholes of the major timber rings making up both of those monuments had been recut as pits over a period of time that extended into the early second millennium BC (Parker Pearson *et al.* 2009; Thomas 2007). The cutting of the Y and Z Holes was likely citing a process in which sites were turned from formerly post to pit monuments (Darvill 2006, 161–4). Around the same time a number of the region’s round barrows incorporated

constructional stages that involved the digging of pit circles. There are a striking number of these, several revealed through recent geophysical survey (Darvill *et al.* 2013; Gaffney *et al.* 2012), suggesting a particular regional tradition, conceivably one that mimicked on a small scale the pit rings of larger monuments with deep histories, Stonehenge and the Southern Circle being paramount. One such pit circle, at Durrington 67 to the south of Woodhenge, was partially excavated by the Stonehenge Riverside Project. Here, a ring of ten pits with a diameter of just under 30m was cut through by the second phase ditch of a round barrow with primary Beaker associations. Creating the Y and Z Holes did not just unify the stone architecture of Stonehenge, but via consciously referenced connections with and between other pit circles, a certain unity of practice was extended across this landscape.

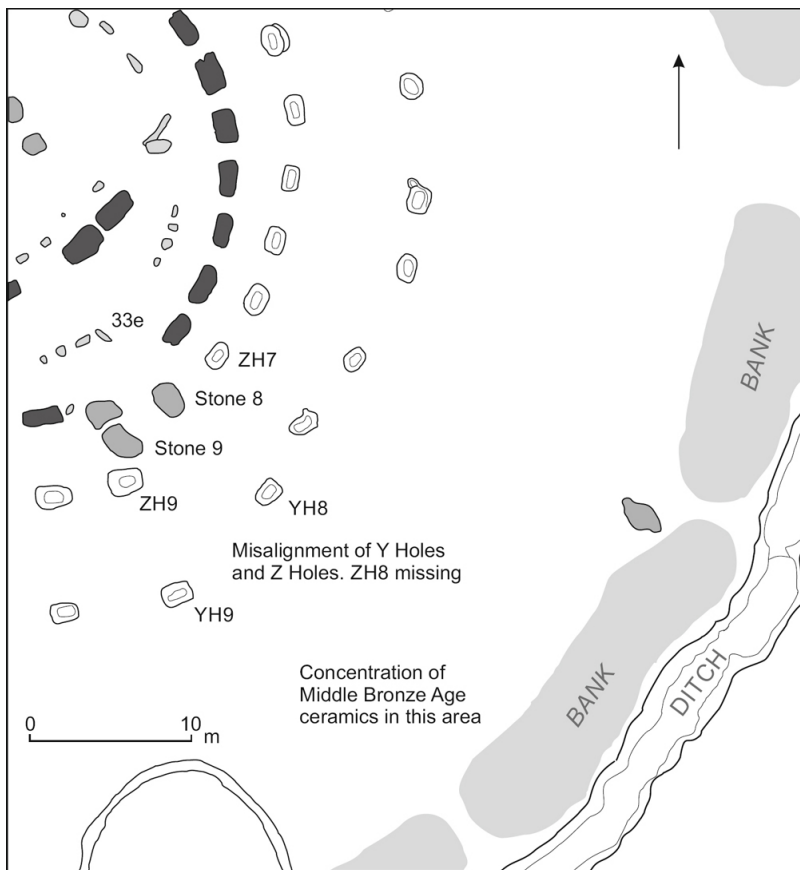


Figure 18.7. Detail of the south-eastern sector of Stonehenge during Stages 4 and 5, showing features related to the marking of the midwinter sunrise and/or southernmost moonrise.

The Y and Z Holes do not describe perfect circles. They spiral in slightly if followed in a clockwise fashion, a major dislocation occurring in the south-east sector between YH8 and 9 and ZH7 and 9 where the wide spacing of c. 6m in the Y Hole circuit implies an 'entrance'. ZH8 is also apparently missing. There is a strong likelihood that the digging of the holes began and ended in this so spiralin slightly if followed in a clockwise uth-east area. Furthermore, the Y Hole circle between YH5 to 9 is notably flattened, as if forming a façade or the 'in-fill' of a wide entrance

gap. YH7 certainly is very shallow and unfinished in appearance (Cleal *et al.* 1995, table 19). There are other peculiarities to this part of the circuit which go back to Stage 2, if not earlier, so the 'dislocation' in the Y and Z Holes simply picks up and reinforces an already ancient distinction afforded to this part of the monument. Of note is the setting of stones 10 and 11 of the Q/R Holes in separate pits, rather than the more normal dumb-bell arrangement, the positioning of stone 33e of the bluestone circle at an acute angle to others in this setting, and the way stones 8 and 9 of the sarsen circle have fallen outwards (Cleal *et al.* 1995, 485; Pitts 2000, 263–5). Both of the latter 'fell' early (Atkinson 1960, 34, 83; Cleal *et al.* 1995, 194), which likely explains the apparent absence of ZH8 and the off-set position of ZH9. But did these stones fall, or were they pushed?

We would argue for intentional and controlled toppling of stones 8 and 9 of the sarsen circle at some point during the early Bronze Age; and that this was undertaken in order to establish, or rather reinforce, an alignment on the midwinter solstice sunrise as viewed from the area of the Altar Stone and great trilithon. As Daw (2015) has recently argued, such a solstitial alignment was built into elements of the Stage 2 monument: the great trilithon, the 'terminal'/back edge of the bluestone horseshoe (defined by visible elements stones 66 and 68) and the prone Altar Stone all incorporate a 10 degree skew from the true perpendicular, as defined by the main north-east to south-west axis. Their alignment is in accord with an observed line of sight on the midwinter sunrise when seen alongside rather than through the great trilithon, or, using stone 33e as an outlier, along the recumbent Altar Stone. However, during stage 2 this solstitial alignment was very much secondary to that on the midsummer sunrise/midwinter sunset as defined by the principal axis of the sarsen settings and north-east entrance and Avenue. However, by the early second millennium BC matters had changed. The Durrington Walls Southern Circle, which incorporated a principal midwinter

sunrise alignment, and Stonehenge no longer operated as elements within a single ceremonial complex. All major solstitial alignments had to be incorporated and condensed within Stonehenge, and since that on the midwinter sunrise remained of critical significance it had to be given additional emphasis through changes to the architecture of the monument. Perhaps the will or resources were not on hand to effect a major phase of rebuilding of this part of the sarsen circle, but structural changes were made, including the outward and presumably carefully controlled toppling of stones 8 and 9 to form a portal into the stone settings. Acts of deposition pick up this reinforced axis. The main concentration of middle to late Bronze Age pottery is in this area, around stones 8 and 9, in YH8, across the interior space between the stone settings and ditch here, and in the adjacent section of ditch (Fig. 18.7). It is likely that Stonehenge's long-standing north-east/south-west solstitial axis retained its significance, but was now fully complemented by that to the north-west/south-east and the rising of the midwinter sun.

Outside the monument. Early Bronze Age settlement and the enclosure of Stonehenge

Mention has been made of the numerous round barrow cemeteries that came to develop around Stonehenge during the course of the latest third and early second millennia BC, but it would be a mistake to regard this as a landscape reserved solely for funerary and ceremonial activity. Throughout the Neolithic and Bronze Age the Stonehenge landscape was also the focus for settlement, sometimes substantial and periodically augmented by large numbers of people coming into the region to engage in seasonal gatherings, monument building and ceremony. For the late Neolithic (c. 3000–2450 cal BC) we can map the extent of settlement through the presence of chronologically distinctive tools in lithic scatters (e.g. chisel and oblique arrowheads),

Grooved Ware pits and, rarely, houses, as at Durrington Walls (Parker Pearson 2007). These display a broad distribution, running along the Avon riverside from north of Durrington Walls to Coneybury Hill, with other foci along King Barrow Ridge (overlooking Stonehenge), just to the west of the monument, and north of the Stonehenge Cursus (Richards 1990, 270–1).

Beaker and early Bronze Age settlement occurred within many of the same zones, but, critically, there are areas where it was now absent (Fig. 18.8a). Evidence of settlement during this period is well attested on higher ground to the east of Amesbury on the other side of the River Avon at Butterfield and Boscombe Downs, where the Amesbury Archer and Boscombe Bowmen burials are located (Fitzpatrick 2011; Rawlings and Fitzpatrick 1996). Other zones can be identified through the results of surface collection and test-pitting undertaken by the Stonehenge Environs and Stonehenge Riverside Projects (Richards 1990; Parker Pearson 2012), including a broad swathe over 2km long running from the west of Stonehenge, up to and beyond the western end of the Stonehenge Cursus/Fargo Wood and to the east on Durrington Down. Beaker, Food Vessel and Collared Urn ceramics have all been recovered from this zone (Richards 1990, 33). There is also a marked concentration of early Bronze Age worked flint and ceramics from Wilsford Down to the south of the Winterbourne Stoke Crossroads barrow group. It is significant that all these areas were later occupied by middle Bronze Age co-axial field systems, indicating a degree of settlement stability across much of the second millennium BC (Fig. 18.8b).

What is striking is the sparsity of settlement evidence from the areas to the east of Stonehenge that were intensively exploited during the late Neolithic (e.g. Coneybury Hill, King Barrow Ridge and the Durrington Walls/Woodhenge area: Richards 1990, fig. 159). Identification of settlement areas is, however, dependent on the survival of diagnostic material, and soft prehistoric ceramics may well have survived better in areas to the west of Stonehenge,

where they were protected under the banks of later field systems, than in those zones with longer histories of cultivation to the east of Stonehenge and closer to the Medieval town of Amesbury. This acknowledged, diagnostic early Bronze Age lithics are not common in the area to the east of Stonehenge, and contemporary ceramics are virtually absent from those contexts (e.g. buried soils and the turf cores of round barrows) in which one would expect them to survive. The soil and turf used to construct the King Barrow Ridge round barrows contained much Neolithic material (from early Neolithic bowl, to middle Neolithic Peterborough Ware and late Neolithic Grooved Ware), but only a small amount of Beaker (Cleal and Allen 1994). Cleal and Allen (1994, 72) note that ‘elsewhere on the Ridge [extending onto Coneybury Hill and Luxenborough Plantation] the Beaker presence is extremely slight’. Work on the A303 road corridor between Stonehenge and the Normanton Down barrow cemetery to the south shows latest third and early second millennia BC settlement to be absent from this area too (Leivers and Moore 2008; see also Cleal *et al.* 1995, 490; Richards 1990, fig. 159). It is telling, given the association noted above between areas of early Bronze Age settlement and later middle Bronze Age field systems, that with the exception of a small block adjacent to Woodhenge no middle Bronze Age field systems are present in this area (Richards 1990, fig. 160).

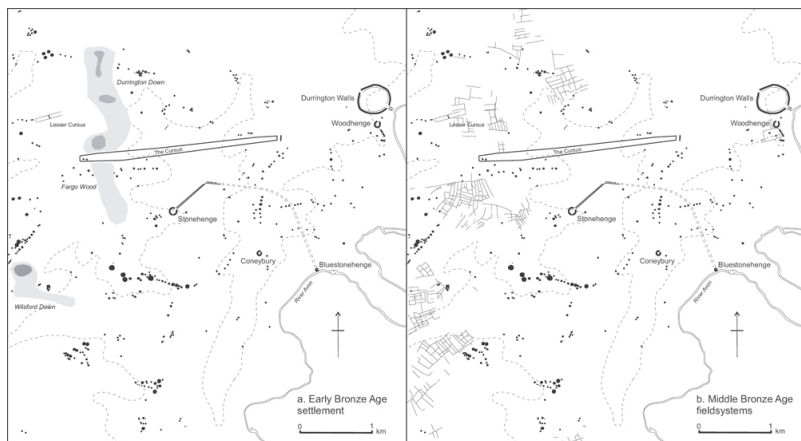


Figure 18.8. Areas of (a) early Bronze Age settlement and (b) middle Bronze Age field systems in the Stonehenge landscape (after RCHME 1979, Richards 1990 and other sources).

By the beginning of the second millennium BC the landscape to the immediate south and east of Stonehenge, extending as far as the Avon riverside, was turned over for grazing, but no longer settlement. There is no obvious ‘pragmatic’ reason for this shift, and so we must assume strong prohibitions – enforced through sacred or political authority, more likely a combination of the two – had developed against communities occupying this space. (What is interesting is that settlement is unaffected by barrow distribution, or vice versa, so the driver has to be the presence of Stonehenge – everything is structured in relation to it). These controls over access to and utilisation of the environs of Stonehenge and its easterly zone would be formalised towards the end of the early Bronze Age through the creation of major land divisions. The evidence comes from a feature whose existence has been recognised for some time, but whose character and chronology has not been well understood – the Palisade/Gate Ditch (Cleal *et al.* 1995, 155–6; RCHME 1979, 25). A linear ditch that originally contained posts along part of its length, the Palisade was considered by Cleal *et al.* to be of possible late Neolithic date, an interpretation much influenced by Alasdair’s excavations at the West Kennet enclosures (Cleal *et al.* 1995, 161). The Palisade runs over a distance of c. 1.5km on a south-west/north-east line, coming within 75m to the north-west of Stonehenge (1995, 161). An entrance gap at this point may correspond with the line of the midsummer sunset as seen from the centre of the monument (see observations above regarding the increasing referencing of this alignment during the early–mid second millennium BC). This section of palisade/ditch can now be seen to belong to a much more extensive system of ‘linear’ earthworks. Its northern extent is marked by the Gate Ditch, which

terminates at the bend in the Stonehenge Avenue, while to the south-west it continues through Normanton Gorse to the edge of the dry valley that separates Normanton and Wilsford Downs. At two points along this length it is broken by funnel entrances. Further to the east, a stretch of north-south linear running from Luxenborough Plantation along the western side of Coneybury Hill and up to King Barrow Ridge may represent a return of this system (Fig. 18.9). It possesses similar out-turned funnel entrances (Bowden *et al.* 2015, 72–3). Overall, the various components of the Palisade/Gate Ditch delineate a block of landscape 2.5×1.4 km in extent that encloses both Stonehenge and the important Normanton Down barrow group.

Dating the construction of the Palisade/Gate Ditch complex has not been easy. While a late Neolithic date was proposed for the length closest to Stonehenge by Cleal *et al.* (1995), other sections excavated on Wilsford Down in 1958 and as part of the Stonehenge Environs Project were considered to be late Bronze Age (Richards 1990, 184, 192–3) – parts of so-called ‘Wessex linears’ (Bradley *et al.* 1994). Work by the Stonehenge Riverside Project in 2008 on a section of the Palisade Ditch 400 m to the west of Stonehenge was more successful in elucidating its sequence and chronology (Fig. 18.10). Here the feature began as a shallow palisade slot from which timbers had been removed. Its line was then replaced by an open ditch, recut on several occasions, and accompanied by an up-cast bank. When the ditch had largely silted up a series of pits were cut into its length, into which were placed three infant burials and the complete burial of a sheep. A radiocarbon date of 1380–1340/1320–1120 cal BC (95.4%, SUERC-32160, 2995 ± 30 BP) was obtained on bone from one of the infant burials, and of 1500–1380 cal BC (95.4%, SUERC-32164, 3155 ± 30 BP) from the sheep. Both dates fall comfortably within the southern British middle Bronze Age, with that from the sheep/goat burial lying early in that period. It is difficult to measure precisely the interval between the creation of

the original palisade line, followed by its redefinition as a ditch and bank system, reinstated on several occasions and then left to largely silt up, and the point in time when the pits were cut, but from start to finish it is likely to have been a century or two, if not a little longer. On this evidence the original Palisade/Gate Ditch complex was likely created late in the early Bronze Age, perhaps contemporary with Stonehenge Stage 5 and the Y and Z Holes. The maintenance of that boundary into the middle Bronze Age is reflected in the manner in which it divides off the reserved, open space within from the field systems and settlements outside. There is a likely connection with the Wilsford Shaft, which we now know is coeval with the Palisade and which is located in the head of a dry valley close to one of its entrances (Ashbee *et al.* 1989).

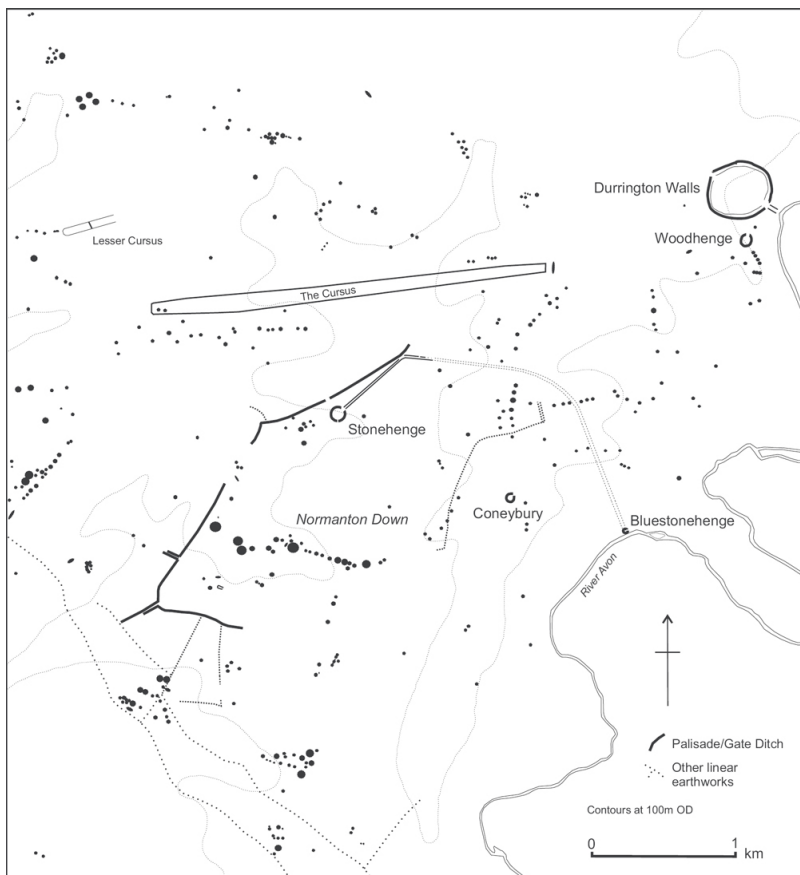


Figure 18.9. The Palisade/Gate Ditch (after RCHME 1979; Richards 1990 and other sources).

What was this Bronze Age ‘enclosure of Stonehenge’ designed to achieve? Perhaps it served to demarcate a zone of common grazing land around and to the south of the monument, although the boundary is not continuous and seems ill-suited to the task, being designed more to emphasise a distinction between the settlement and field system areas to the west and the space occupied by Stonehenge and the Normanton Down cemetery. With this in mind, the process of enclosure looks to have been undertaken with the intention of defining a zone of sacred space around Stonehenge, and separating it from the world of the

profane or quotidian beyond. This may have been a highly political act, since its execution also served to separate the Normanton Down cemetery from other parts of the landscape, and in the process drew attention to a connection it held with Stonehenge. That cemetery includes some of the richest early Bronze Age burials in northern Europe, including the famous Bush Barrow burial (Wilsford G5) and the 'trinket graves' of Wilsford G7 and G8. Needham *et al.* (2010, 31) suggest the Normanton Down 'dynasty' actively sought connection to Stonehenge, 'linking the generic and timeless ancestors and gods of the henge to the specific, named ancestors' of the barrow cemetery.



Figure 18.10. The Palisade Ditch under excavation, 2008, with sheep burial (dated to 1500–1380 cal BC) in late phase pit in foreground.

Conclusion

Since a firm chronology for the monument was established in the mid-1990s, the Chalcolithic and Bronze Age history of Stonehenge has been overshadowed by that of the great phases of construction and reworking which occurred during the late Neolithic. It is hardly surprising, since the colossal effort embodied in the creation of the Stage 2 sarsen and bluestone settings was never again matched. Some scholars have characterised the late third and early-mid second millennia BC as a time of steady decline in the monument's importance: Darvill (2006, 157) arguing that in centuries following 2000 BC 'its status altered and it changed from being active in people's lives to being a relic from a bygone age', while Bowden *et al.* (2015, 72) go further in suggesting the Y and Z holes 'were perhaps a last half-hearted attempt to recreate something out of what was already, or was rapidly becoming, a ruinous site'. It is true that the re-setting of the bluestones and creation of the Y and Z Holes hardly compare with the feats of labour and logistics displayed in the decades around 2500 cal BC. Digging the Y and Z Holes would have involved less labour input than demanded by the construction a large round barrow.

The point we wish to stress is that constructional effort focused on features *within* the monument may not be a satisfactory index of its significance and sanctity, not least because it ignores everything that was going on in the environs of Stonehenge. The monument was the focal point for gathering and the creation of the great barrow cemeteries of Normanton Down, King Barrow Ridge, Winterbourne Stoke and so on. Grave goods accompanying burials within those barrows speak of international connections and real cosmological power (Needham *et al.* 2010; Woodward and Hunter 2014). Stonehenge during this time may have held greater renown than ever before. Perhaps its heyday was during the early Bronze Age?

As we have outlined here, over the 900 years or so from c. 2400–1500 cal BC subtle but important changes took place at the monument. The newly dead were now buried out in the landscape,

many among the settlements of the living, rather than within the henge. One consequence is that the ancestors seen to reside in Stonehenge become deeply historical or mythic figures. The marking of the midwinter and midsummer solstices remained important – now with a formalised double axis – and presumably provided the timing for gathering and ceremonies, even for funerary commemorations out in the wider landscape. Various structural modifications, including the creation of the Y and Z Holes, allowed Stonehenge to take on and condense within a single focus many of the roles previously performed by other monuments in the region; some, like the Southern Circle, by then largely relegated to memory. Potentially this citation and condensing explains the energetic lives of the bluestones, being set, re-set, fragmented and so on – their reworking playing out the dynamism and change inherent in other structures and settings. Much could be about remembered and imagined belongings, and beginnings.

Beyond the earthwork, the monument continues to exert an influence on the way the landscape is conceptualised and inhabited, with settlement shifting to the west, away from its late Neolithic focus on the east and the Avon riverside. Eventually the distinction between inhabited and sacred space becomes formalised through the creation of the Palisade/Gate Ditch ‘enclosure’, which maintains its status as a critical boundary into the later second millennium BC. This was the last great act of wrapping (cf. Richards 2013, 18–22). Throughout, there is the weight and rhythm of history, of supernatural potency, of sacred authority, and the politics of positioning for primary connection to the monument.

We can end by turning to face the past, or thinking about how a past was comprehended in the established early Bronze Age by communities engaged with Stonehenge. By say 1800 or 1500 cal BC would much be understood of the motives behind the creation of the great sarsen and bluestone settings of the mid-third

millennium cal BC? Would names still be attached to those stones? Are we dealing with remembered or imagined origins? It is tempting to envisage knowledge falling into the kind of mythic history described by Gosden and Lock (1998), a time different to that of the present world. Yet with such a pre-eminent monument as Stonehenge surely there existed compulsion to maintain memory with fidelity, especially where power and position was determined by an ability to demonstrate one's genealogical links back to those who built a structure of such renown? Seven hundred or a thousand years, 30 or 40 generations, is a long time, but the preservation of individual names and stories over such a span is not without precedent among non-literate societies (consider, for example, the transmitted memory of the chiefly Roy Mata, buried around 1250 AD in Efate, Vanuatu: Garanger 1972). Perhaps the claims over Stonehenge made by those buried in the Normanton Down barrows, and physically asserted through the eventual enclosure of both cemetery and monument, were more real than fictive, historical rather than mythic.

Notes

1

At the time, and working within a largely pre-radiocarbon chronology, phase II was seen to belong to c. 1700 BC, and phase III to c. 1550–1400 BC (Atkinson 1960).

2

A very similar argument for an early Bronze Age date for the sarsen settings, which took a critical stance on the contextual reliability of available radiocarbon dates, was made by Richard Harrison (2010).

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Interdigitating pasts: the Irish and Scottish Neolithics

Alison Sheridan

Introduction

This contribution is offered to Alasdair Whittle as thanks for his invaluable efforts to improve our knowledge of what happened, when, at various points during the Neolithic in Ireland and Scotland (and of course elsewhere). While the author may be engaged in a long-standing and sometimes lively debate with our honorand on aspects of the Neolithisation process – captured in moving picture format and currently available to experience online¹ – there is, nevertheless, sincere admiration for the major contribution he has made to Irish and Scottish Neolithic studies through the *Gathering Time* project on the early Neolithic (Whittle *et al.* 2011a) and, currently, the *Times of Their Lives* project which, among its many inspirational initiatives, is revolutionising our

understanding of the Grooved Ware users of Orkney (e.g. MacSween *et al.* 2015; Richards *et al.* 2016). His work shows us where fresh research and fieldwork need to be undertaken in order to resolve the areas of active debate; and one of the many pleasures of working with Alasdair is that he embraces this debate in the appropriate spirit of academic discourse. While we may continue to differ significantly in our views of some elements of the Neolithisation of this archipelago (as will be seen below), and to argue our positions with passion, this is done above all from a position of friendship and mutual respect.

The purpose of this contribution is to examine the ways in which the trajectories of Neolithic developments in Ireland and Scotland are intertwined, since this is a theme touched upon in Alasdair's own work and it has much to reveal about both origins and social dynamics. In doing so, the author has had the benefit of accessing information that was not available, or was not fully published, when *Gathering Time* appeared. This includes radiocarbon dates for the passage tomb on Baltinglass Hill, Co. Wicklow (Schulting *et al.* forthcoming; Whitehouse *et al.* 2014); a synthetic study of 1100 radiocarbon dates pertaining to the Irish Neolithic (McLaughlin *et al.* 2016); the final results of Nicki Whitehouse's INSTAR project on Neolithic farming in Ireland (McClatchie *et al.* 2016; Whitehouse *et al.* 2014) and of Ann Lynch's excavations at the portal tomb of Poul nabrone, Co. Clare (Lynch 2014); new discoveries of early Neolithic settlement activity in Co. Sligo (Hession 2012; D. Murphy 2015) and the first ancient DNA results for a Neolithic individual in Ireland (Cassidy *et al.* 2016).

This contribution will focus on three phenomena that link the Neolithics of Ireland and Scotland: firstly, their shared origins in two strands of the Neolithisation process, when Continental 'things, practices and beliefs' (to borrow a Whittle style of terminology) appeared; secondly, the regular interactions – mostly, but not exclusively, linking north-east Ireland with south-

west Scotland – that occurred over much of the fourth millennium cal BC (and indeed later); and finally, the elite long-distance interactions that took place towards the end of the fourth millennium and at the beginning of the third, which had such an impact on the choice of monumental design, ceremonial practice and material culture over parts of Ireland and Scotland (and indeed beyond). In doing so, the author is revisiting topics that she had considered over a decade ago (Sheridan 2004a), and updating the picture. The structure echoes that of the research agenda recently set out as part of the proposed *Boyne to Brodgar* research initiative on Neolithic monumentality in Ireland, Scotland and the Isle of Man, and some of the finer points of the argument can be found in a recent publication on that topic (Sheridan and Cooney 2014).

Shared origins

Despite there being several differing views about the nature, agency, date and directionality of the Neolithisation process in these islands (e.g. Anderson-Whymark and Garrow 2015; Cooney *et al.* 2011; Sheridan 2010a; 2015; Sheridan and Pétrequin 2014; Thomas 2013; Whittle *et al.* 2011a), there are some undeniable similarities between Scotland (and elsewhere in Britain) and Ireland regarding the material traces left by this complex and multi-strand process. These suggest some commonality of origins which, it is proposed, relate to 1) a Breton strand of Neolithisation and 2) a ‘Carinated Bowl’ strand of Neolithisation, originating in northern France. Each will be reviewed below, with the emphasis being on recent pertinent developments, rather than on a repetition of oft-rehearsed arguments that can be found in the publications cited above.

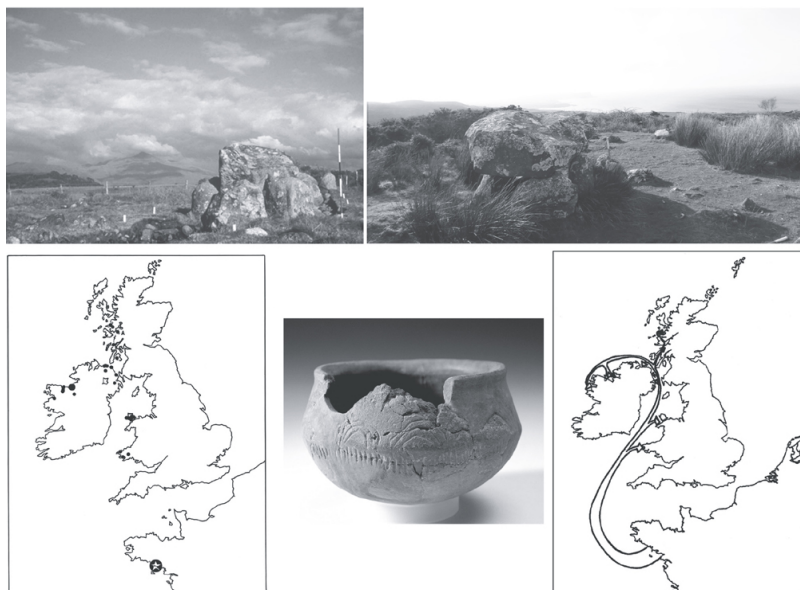


Figure 19.1. Breton-style monuments: Achnacreebeag, Argyll and Bute (top left) and Ballintoy, Co. Antrim (top right). Bottom row, from left to right: monument distribution; Breton-style late Castellar pot from Achnacreebeag; supposed route taken by Breton settlers (sources: the late Graham Ritchie; Robert Hensey; Sheridan 2004a; 2010a).

The Breton strand of Neolithisation

One of the undeniable similarities between the Irish and Scottish (and indeed also Welsh) Neolithic is the closed polygonal megalithic chambers and simple passage tombs that are found around the coast of the northern half of Ireland and along the western coast of Scotland and Wales (Fig. 19.1). No Mesolithic precursor for such monuments exists and as discussed below, these probably constitute the earliest megalithic monuments in Ireland and Britain. Their markedly coastal distribution suggests a maritime connection between their builders and, as repeatedly argued in the past (e.g. Sheridan 2010a), their resemblance to some middle Neolithic II monuments in the Morbihan region of Brittany, together with the striking similarity of the pottery found

at Achnacreebeag on the west coast of Scotland to late Castellar and other Breton middle Neolithic II pottery (Sheridan 2016), points towards an Atlantic, Breton connection. What appears to be at issue in this part of the Neolithisation debate is the nature of this French connection, and the date of the appearance of this tradition of megalithic monumentality and pottery in Ireland and Britain.

To cut a long story short, the author's view is that this connection took the form of a northward maritime diaspora-like movement of small numbers of people from the Morbihan to the coastal areas outlined above at some point between c. 4300 and c. 3900 cal BC (and quite possibly towards the end of that date bracket). Such movement would have followed the collapse of a theocratic power structure in the Morbihan, whose material expression had included the construction of gigantic standing stones and funerary mounds (Carnac tumuli: Cassen *et al.* 2012). The natural felling of many standing stones by a probable earth tremor around 4500 cal BC (Cassen 2009; see also Bradley and García Sanjuán, this volume) would arguably have been a major contributory factor to changes in society at the time. In the Morbihan, and illustrated in the monument of Er Grah in the Locmariaquer complex (Cassen 2009; Cassen *et al.* 2012, 967), these changes during the second half of the fifth millennium are reflected in a period of architectural transition in funerary monuments between the use of closed chambers and the use of passage tombs, when *both* closed chambers *and* simple passage tombs with short passages were being constructed.

The reasons for favouring this 'immigrant farmers' scenario over the model of 'native adoption of Continental ideas and practices, as part of regular and long-standing maritime links', as favoured by Thomas (2013) and Anderson-Whymark and Garrow (2015) among others, have been presented elsewhere (e.g. Sheridan 2015). Suffice it to say that there is not a shred of evidence to support the view that the Mesolithic inhabitants of

Ireland, Scotland and Wales were regularly (or indeed ever) sailing south to visit and interact with the inhabitants of the Morbihan. By contrast, there is evidence to show that the inhabitants of the Morbihan – or at least, some of them – had a long tradition of sailing in deep water, as demonstrated, for example, by the presence of Iberian fibrolite axeheads and variscite jewellery in the Carnac tumuli, along with the presence of Carnac-style Alpine axeheads, and of locally-made ‘Cangas’-type copies of them, in Iberia (Cassen *et al.* 2012, fig. 34; Fábregas Valcarce *et al.* 2012). Indeed, Serge Cassen’s argument for the presence of a late Castellar bowl in a megalithic monument near the coast at Dombate, in Galicia in the north-west corner of Spain, offers a kind of mirror image to Achnacreebeag: here, too, the monument started out as a closed chamber, and then a simple passage tomb was added to it, with Cassen arguing that the pot was deposited around or before c. 3800 cal BC (corresponding to the earliest phase of the passage tomb: Cassen *et al.* 2012, 977, 979, fig. 36).

In our opinion, other attempts to cast doubt on the ‘emigrant Breton farmers’ model – for instance by denying or downplaying the distinctiveness of the Achnacreebeag structure or the late Castellar attribution of the pottery, and by claiming that Achnacreebeag ‘can be fitted without difficulty into local developments’ (Whittle *et al.* 2011b, 850–1) – fail to provide detailed or convincing alternative arguments, or to set out precisely what these local developments had been. In this author’s opinion, those local developments consisted of the appearance of settlers from the Morbihan, who may well have coexisted alongside indigenous groups for several generations without showing any signs of interacting with (or even encountering) them; and the way in which it fits in is that it stands at the beginning of a long and complicated trajectory of passage tomb and ceramic development in Scotland, just as its counterparts in Ireland stand at the beginning of a similarly long, complicated but somewhat different trajectory of passage tomb development there

(as originally articulated in Sheridan 1986a and reworked in Hensey 2015).

One new – if controversial – type of evidence that is relevant to the broader Neolithic immigration debate, either as it pertains to the Breton strand or to the ‘Carinated Bowl’ strand of Neolithisation, is the results of ancient DNA analysis of individuals whose remains have been found in Ireland (Cassidy *et al.* 2016) and Scotland. While the Scottish analyses (including those for Mesolithic and early Neolithic individuals) are still under way and results are not yet available, the results from a middle Neolithic woman (dated to 3343–3020 cal BC) found at Ballynahatty, Co. Down, suggest a genetic ancestry that is ultimately traceable to the Near East, but which finds close links in Spanish Cardial, Epicardial and middle Neolithic populations (Cassidy *et al.* 2016, 369, fig. 3). This has been interpreted as evidence for a pre-middle Neolithic influx of people with a different genetic makeup from that expected for the Irish Mesolithic population – in other words, for immigrant Neolithic farmers. There is much that will need to be discussed regarding the interpretation of these (and the forthcoming Scottish) results, and many more individuals, both here and abroad, will need to be analysed; it is unfortunate that no unburnt bones have been found in the Breton-style monuments in Ireland and Britain. It would be premature to place any emphasis on the apparent Iberian ancestry of the Ballynahatty woman, although it could be noted that our putative Breton immigrants might be expected to show some Iberian element in their genetic makeup, in view of their links with Spain as mentioned above (and cf. Marchand 2014 on earlier interactions between hunter-fisher-gatherer groups further south along the Atlantic coast of France with Epicardial farmers).

The second element of the debate surrounding these monuments concerns their dating in Ireland and Scotland, and indeed Wales. With no radiocarbon dates existing (or possible) for the Achnacreebeag structure, and with widespread scepticism

about the late fifth–early fourth millennium dates obtained by Göran Burenhult for some of the Carrowmore monuments (Bergh and Hensey 2013), the date of their construction and initial use currently relies on the chronological evidence for late Castelletic monuments and pottery in France. Whittle *et al.* (2011b, 850) emphasised that formal Bayesian modelling of the available French dates for the Castelletic ‘culture’ by Cassen *et al.* (2009, fig. 13, table 10) suggested that late Castelletic pottery did not go out of use in France until *4120–3610 cal BC (95% probability)*;² from this they implied that its appearance at Achnacreebeag – were one to accept that it is indeed a Breton pottery type – could hence have fallen towards the end of this date span. Moreover, their Bayesian modelling of all the then-available dates for passage tombs in Ireland (excluding Burenhult’s dates) for the *Gathering Time* project led them to argue that passage tombs did not start to be built in Ireland until as late as *3640–3205 cal BC (at 95.4% probability)*: Cooney *et al.* 2011, 657) – in other words, the middle Neolithic.

New dates from Irish passage tombs obtained since 2011 have, however, pushed back that horizon. Robert Hensey’s and Stefan Bergh’s dates for bone and antler pins from the simple passage tombs 3 and 55A at Carrowmore, Co. Sligo, show that these monuments were in use from as early as *3775–3520 cal BC at 95.4% probability* (Hensey and Bergh 2013, 42), while a date of 5031 ± 25 BP (3946–3715 cal BC at 95.4% probability, UBA-14759) from calcined human bone from the small, unusual chamber III at Baltinglass, Co. Wicklow, suggests that burial activities at this multi-phase passage tomb began during the first quarter of the fourth millennium (Schulting *et al.* in press; Whitehouse *et al.* 2014).³ As argued elsewhere (e.g. Sheridan and Cooney 2014), the dated pins from Carrowmore may well relate to a secondary re-use of the monuments in question, given that the cemetery is likely to have had a long period of use. Any unburnt bone that may have related to an initial use of these monuments would not have survived, or could have been cleared out during

re-use.

In attempting to pin down the likely period of construction of the megalithic closed chambers, one could point to the fact that a *terminus post quem* for the construction of one simple passage tomb – Druid’s Cairn, Ballintoy, Co. Antrim – is suggested by the presence of Carinated Bowl pottery in an apparently pre-construction context (Hensey 2015; Mogeey 1941; Sheridan 2003; see below for the dating of this pottery tradition in Ireland), while a *terminus ante quem* for the construction of Achnacreebeag is given by the fact that its late Castelleic bowl is unequivocally ancestral, in design terms, to the similar-looking decorated bipartite bowls found in Clyde cairns in Scotland and in some court and portal tombs in Ireland (Fig. 19.2) (Sheridan 2016). Rick Schulting has argued that court tombs are likely to have been constructed around 3700–3570 cal BC at 95% probability (Schulting *et al.* 2012), and the indications for Clyde cairns are that they are likely to have a similar date (Schulting 2004; Schulting and Richards 2002; Sheridan and Schulting 2006), developing from earlier translations into stone of a specific non-megalithic monument format. Vicki Cummings’ excavation of a multi-phase Clyde cairn at Blasthill on the Kintyre peninsula (Cummings and Robinson 2015) illustrates this process: radiocarbon dates from short-lived charcoal, calibrating to 3980–3790 cal BC (GU-21796) and 3950–3710 cal BC (GU-21795) respectively at 95.4% probability, were obtained from the fill of a rectangular chamber in which a decorated bipartite bowl of Castelleic ancestry was found; this chamber preceded the monument’s conversion into a ‘classic’ Clyde cairn. If the charcoal was not residual from pre-monument activity, and if it was contemporary with the deposition of the bowl, then on ceramic grounds this suggests a *terminus ante quem* for the construction of Achnacreebeag within the first quarter of the fourth millennium. If this reading of the evidence is correct, this confirms the closed chambers and simple passage tombs of Britain and Ireland as the

earliest megalithic monuments in our islands.

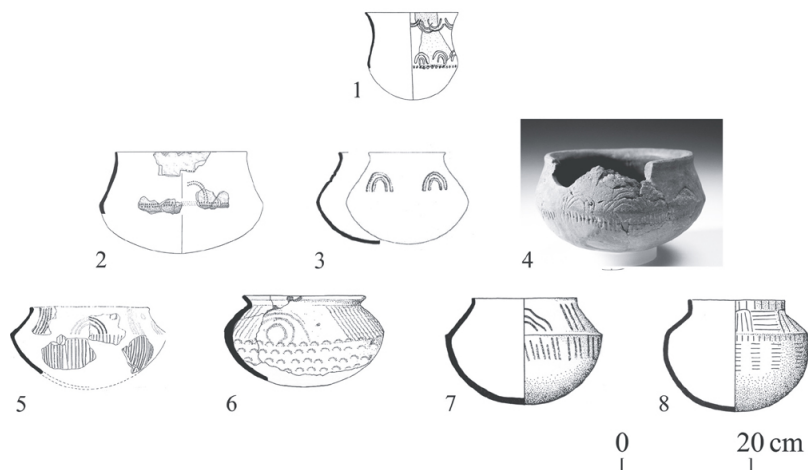


Figure 19.2. Castellic pottery in the Morbihan region of Brittany and in Normandy and some of its ceramic ‘descendants’ in Scotland and Ireland. Of the French examples, 1 is early Castellic (4700/4600–4300 cal BC) and 2 and 3 are late Castellic (c. 4300–3900 cal BC). 1. Castellic, Morbihan; 2. Er Grah, Morbihan; 3. Vierville, Normandy; 4. Achnacreebeag, Argyll and Bute; 5. Ballymacaldrack, Co. Antrim; 6. Blasthill, Argyll and Bute; 7–8 Beacharra, Argyll and Bute. From Sheridan 2016.

As our honorand agrees, the only way to arrive at a definitive statement on the date of this monumental (and ceramic) tradition in Britain and Ireland is to excavate further monuments of this type, and to seek the places where their builders had lived. The fact that no settlements relating to this tradition have yet been found does not mean that none existed, but rather highlights the difficulties of locating what could be ephemeral traces in landscapes that are not ploughed.

The ‘Carinated Bowl Neolithic’

The other strand of Neolithisation that reached both Ireland and

Scotland – together with parts of England and Wales – is that which has been termed the ‘Carinated Bowl Neolithic’, after the distinctive style of pottery with which it is associated (Fig. 19.3) (Sheridan 2007).⁴ The hypothetical settlers associated with this particular package of novelties appear to have originated as one of several regional groups in and around northern France that emerged towards the end of the fifth millennium; their pottery combines elements from both the northern French Chassey and the early Michelsberg traditions. An example of such pottery that bears a striking resemblance to early Carinated Bowl pottery on our side of the Channel has recently been discovered at Escalles, on the Nord-de-Calais coast facing the English coast (Praud 2015). And while there is no indication that the appearance of the aforementioned Breton strand of Neolithisation on both shores of the Irish Sea involved any movement from Scotland to Ireland (or vice versa), this may not be the case with the spread of the Carinated Bowl Neolithic to Ireland. Indeed, the question of directionality, along with that of dating its appearance in different areas, remain key topics of contention and uncertainty in the Neolithisation debate.



Figure 19.3. The Carinated Bowl Neolithic: examples of pottery, and

hypothetical route taken by settlers from northern France and their descendants. (From Sheridan 2016).

To cut a long story short once more, the radiocarbon dates pertaining to the earliest dated manifestation of the Carinated Bowl Neolithic in Ireland – that is, those obtained for the causewayed enclosure at Magheraboy, Co. Sligo, suggesting its construction in 4115–3850 cal BC (95% probability; 4065–3945 cal BC at 68% probability: Cooney *et al.* 2011, 665), significantly earlier than the mass of dates obtained for the Irish Neolithic ‘house boom’ of 3730–3660 cal BC (95% probability: Cooney *et al.* 2011, 598; Smyth 2014) – had been difficult to reconcile with a model for a northerly and westwards spread of Neolithic ‘things and practices’ from the south-east corner of England as proposed by the *Gathering Time* team (Whittle *et al.* 2011b). At the time, this was explained as a ‘localised innovation in the context of wider cultural influences, perhaps with connections again to north-west [sic] France’ (Cooney *et al.* 2011, 667), but in the light of new evidence this statement can now arguably be revised.

Since the publication of *Gathering Time*, more evidence for early fourth millennium, pre-‘house-boom’ Carinated Bowl-associated activity in Ireland has been accumulating. The research into the dating of the human remains from Poul nabrone, Co. Clare, portal tomb (Lynch 2014), which was at an early stage when the Whittle *et al.* volumes were published in 2011, has been completed, with Schulting concluding that the monument was in use from 3875–3725 cal BC at 95.4% probability (Schulting 2014). As argued elsewhere (e.g. Sheridan and Cooney 2014), portal tombs may well represent one of a number of regionally-specific translations into stone of a rectangular timber mortuary structure format that is known elsewhere in early Carinated Bowl Neolithic contexts. In addition, there are other early dates for human remains associated with the Carinated Bowl Neolithic, from pits cut into gravel in the immediate vicinity of the court tomb at

Altanagh, Co. Tyrone (Williams 1986). The two dates in question were determined from calcined bone and were obtained as part of Eileen Murphy and Barra Ó Donnabháin's INSTAR project on *The people of prehistoric Ireland*;⁵ they are 3942–3710 cal BC (5020 ± 29 BP; UBA-14390) and 3913–3698 cal BC (4987 ± 26 BP; UBA-14392), both calibrated at 95.4% using OxCal v4.2.4 (E. Murphy and Ó Donnabháin forthcoming; note a change in feature numbering between the excavation and the 1986 publication). As with other dates on calcined bone, however, the possibility of carbon exchange between old wood used in the funeral pyre and the bone apatite (Snoeck *et al.* 2014) cannot be ruled out – although these dates are not outwith the overall currency for Carinated Bowl pottery, and caution should be used to avoid invoking carbon exchange as an excuse for unexpectedly early dates. Further dates for calcined human bone are anticipated from Schulting's planned investigation of the finds from the pre-court tomb non-megalithic 'linear zone' mortuary structure at Dooey's Cairn, Ballymacaldrack, Co. Antrim (Schulting pers. comm.; Sheridan 2006): non-megalithic precursors for court tombs are among the package of novelties associated with the Carinated Bowl Neolithic. And recent developer-funded excavations not far from Magheraboy in Co. Sligo are revealing that this site is not alone, in that part of Ireland, in producing markedly early dates: at Rathquarter 1 (D. Murphy 2015), two pits associated with Carinated Bowl pottery and lithics have produced dates, from elm (pit 3) and hazel (pit 4) charcoal, of 5280 ± 40 BP (ICA-15C/0203, 4240–3990 cal BC at 95.4% probability) and 5240 ± 40 BP (ICA-15C/0205, 4230–3960 cal BC at 95.4% probability) respectively, while at Ballydoogan 1 a date calibrating to 3947–3782 cal BC was obtained for charcoal from a pit with Carinated Bowl pottery; another date calibrating to 3778–3545 cal BC was also obtained for this site (Hession 2012). While doubt has recently been cast on the early Neolithic date of the Céide field system in Co. Mayo (Whitefield in press), there remains a distinct

possibility that there was a significant, early Carinated Bowl Neolithic presence in north-west Ireland – with a sufficient critical mass, and need, to warrant perpetuating the Continental tradition of building a causewayed enclosure.

If the Co. Sligo dates provide an accurate record of early Carinated Bowl Neolithic activities in this part of Ireland, this begs the question of how the putative settlers implicated in their appearance reached north-west Ireland – and let us not forget the similarly early date of 5190 ± 80 BP (OxA-4269, 4240–3790 cal BC at 95.4% probability) for a domesticated cattle tibia from Kilgreany Cave in Co. Waterford, at the opposite end of the island (Cooney *et al.* 2011, 628). This is roughly as early as the earliest appearance of the Carinated Bowl Neolithic in south-east England. If one accepts the ‘immigrant farmers’ hypothesis, then sailing directly from the Nord-Pas de Calais region of northern France to north-west Ireland is not the most obvious thing to do. Nor is there a chain of early Carinated Bowl Neolithic sites in south-west England and south-west Wales, such as one might expect were a process of rapid migration to pass that way. This author’s preferred model for the spread of ‘the Carinated Bowl Neolithic’ (e.g. in Sheridan 2010a) has been for a rapid diasporic spread up the eastern coast of Britain and down across southern Scotland, then across to Ireland (and the Isle of Man), since this provides the best geographical fit with the distribution of early Carinated Bowl Neolithic evidence (Sheridan 2007, fig. 1; 2010a). While on first view the earliest Irish dates may seem to be earlier than the earliest Scottish dates, in fact there is some overlap between the two: at the 95% probability level, the modelled date range of 4115–3850 cal BC for the construction of the Magheraboy causewayed enclosure overlaps with the *Gathering Time* date model for the appearance of ‘Neolithic things and practices’ in north-east Scotland (3950–3765 cal BC: Bayliss *et al.* 2011, 824), and so the scenario outlined above is not impossible. The fact that no definite Neolithic causewayed enclosure has been discovered in Scotland

does not decrease its plausibility since, as emphasised elsewhere (e.g. Sheridan 2010a), such sites – which feature in the Continental background to the Carinated Bowl Neolithic – would only be constructed if there were both the critical mass of people, and the perceived need, to build them.

Subsequent developments during the fourth millennium: interaction across the North Channel of the Irish Sea (and beyond)

It appears that, having become established, our putative settlers rapidly created networks of contacts linking farming communities, over which materials, objects, people and ideas circulated. In doing so they were perpetuating a practice that had a long pedigree on the Continent, and it is clear that such networks played an important role in the maintenance and reproduction of society, providing access to marriage partners and offering communities security through alliances, as well as facilitating access to desirable resources and objects. At least one of these informal and unbounded networks linked parts of western and south-west Scotland with north-east Ireland from early in the fourth millennium cal BC onwards, as is clear from artefactual, architectural and stylistic evidence: one network, as Jack Scott (1973) had observed, connected the inhabitants of Cos Antrim and Derry/Londonderry with those of the Clyde and the west coast, while another may well have connected the inhabitants of Co. Down with Galloway and the Ayrshire coast (and indeed the Isle of Man). Evidently the northern channel across the Irish Sea did not prove to be a barrier to these communities, who will have learned quickly the best times to undertake the crossing. As with Victorian era farmers in northern Ireland, who found it easier to travel to Scotland for market days rather than travelling inland over the Antrim Plateau, the short (but at times treacherous) sea crossing may well have constituted a preferred option for some

interactions.

The artefactual evidence for this Irish–Scottish connection shows movement in both directions (Figs 19.4–5). Axeheads and roughouts of porcellanite from Tievebullagh and Rathlin Island, County Antrim (Fig. 19.4) (Cooney and Mandal 1998; Cooney *et al.* 2013; Sheridan 1986b; Sheridan *et al.* 1992) and artefacts of high-quality Antrim flint (Fig. 19.5 left) (Saville 1999) travelled across to Scotland, while pitchstone from Arran travelled in the opposite direction (Fig. 19.5 right) (Ballin 2009; 2015); it may also be that some axeheads made from Langdale tuff reached Ireland via the Scottish–Irish networks, particularly the one involving Galloway (Cooney and Mandal 1998; Sheridan *et al.* 1992). The fact that not only finished porcellanite axeheads but also roughouts were ending up in Scotland suggests that some people from Scotland had probably been travelling to the source areas (or to intermediate communities) to obtain these, for finishing back at home. The long distances travelled by some porcellanite axeheads (Fig. 19.4) suggests that they probably circulated across overlapping, interlinked networks – including the one that linked south-west Scotland with north-east Scotland via the Great Glen, or the one linking western Scotland and the Hebrides with Orkney – while in the case of the two examples found in Shetland, as argued elsewhere (Sheridan 2014a, 70), another agency of movement may have operated: these may have been taken there by farming colonists from western Scotland as part of a secondary expansion of the farming way of life, perhaps during the late thirty-eighth or thirty-seventh century BC. That this targeted exploitation of specific resources and movement of the various materials probably started soon after the farming lifestyle was established in Ireland and Scotland is suggested by the fact that a broken porcellanite axehead was found in one of the ditches at Magheraboy causewayed enclosure in Co. Sligo. There are other early Neolithic finds of porcellanite axeheads as well, for instance at the Donegore Hill causewayed enclosure

(Mallory *et al.* 2011, 169–79; see also Ballin 2015 for the dating of pitchstone circulation). That the movement of some artefacts continued through the fourth millennium is clear from various dated finds, including the axe found at Shulishader in Lewis, with its porcellanite axehead (Fig. 19.4); the rosaceous wood haft produced a radiocarbon date of 4470 ± 95 BP (OxA-3537, 3340–3020 cal BC at 95.4%: Sheridan 1992). While this axehead could have reached Lewis by passing from Ireland to south-west Scotland, then up the coast via a network linking south-west Scotland with the Hebrides, the possibility of long-distance direct contact cannot be ruled out, since sherds from two distinctive Hebridean Neolithic pots have been found at Portstewart on the north coast of Ireland. The currency for this type of pottery includes the period when the Shulishader axehead was deposited (Sheridan 2016).

The architectural connections can be seen most clearly in the megalithic (and indeed non-megalithic) monuments associated with the Carinated Bowl Neolithic (Fig. 19.6). Childe (1935) was probably the first to comment on the affinities between Clyde cairns in south-west Scotland and court tombs in Ireland, and Piggott (1954) subsequently developed the concept of a ‘Clyde-Carlingford culture’ on the basis of this and other links. As noted above, on currently-available dating evidence, court tombs seem to have been constructed in the 3700–3570 cal BC date bracket (Schulting *et al.* 2012) and ‘classic’ Clyde cairns may have had a roughly similar *floruit* period. Both Clyde cairns and court tombs can be regarded as a regionally-specific development from the non-megalithic monuments featuring rectangular timber mortuary structures of the initial ‘Carinated Bowl Neolithic’ (of which another regional variant, the portal tomb, seems not to have been adopted in Scotland – its distribution instead reflects other networks of contact operating within Ireland and around other parts of the Irish Sea: Sheridan 2004a). These non-megalithic forerunners are attested not only in Scotland (and elsewhere in

Britain) but also in Northern Ireland, at Dooley's Cairn, Ballymacaldrack, Co. Antrim (Collins 1976; Kinnes 1992, 212; Sheridan 2006). Another type of early Neolithic non-megalithic funerary monument found both in north-east Ireland and in Scotland is the round mound covering a cremation area, with Irish examples at Knockiveagh, Co. Down, and Lyles Hill, Co. Antrim (Sheridan 2006; 2010b).

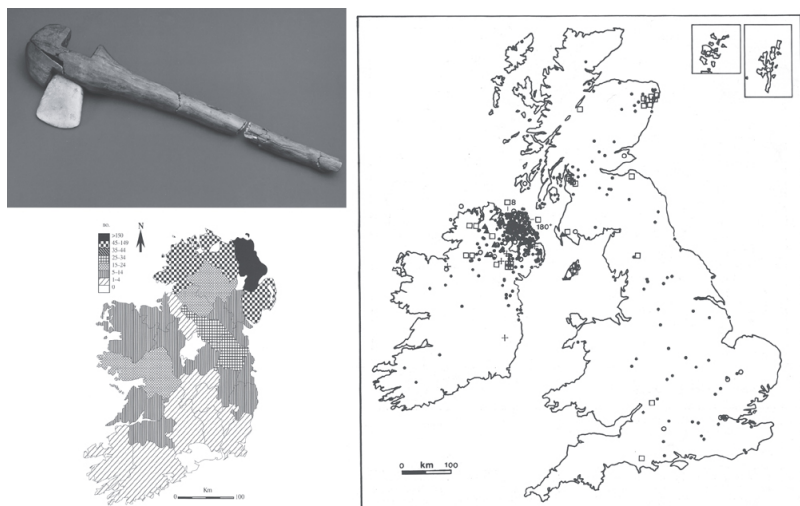


Figure 19.4. Antrim porcellanite axeheads (and related implements).

Top left: complete axe found at Shulishader, Isle of Lewis, with porcellanite axehead; right: distribution as of 1986; bottom left: Irish distribution as of 1998, following Irish Stone Axe Project. Over 12,500 porcellanite artefacts (mostly axeheads) are now known, the overwhelming majority in Ireland. (Photo: National Museums Scotland; overall map: Sheridan 1986b; Irish map: Cooney and Mandal 1998).

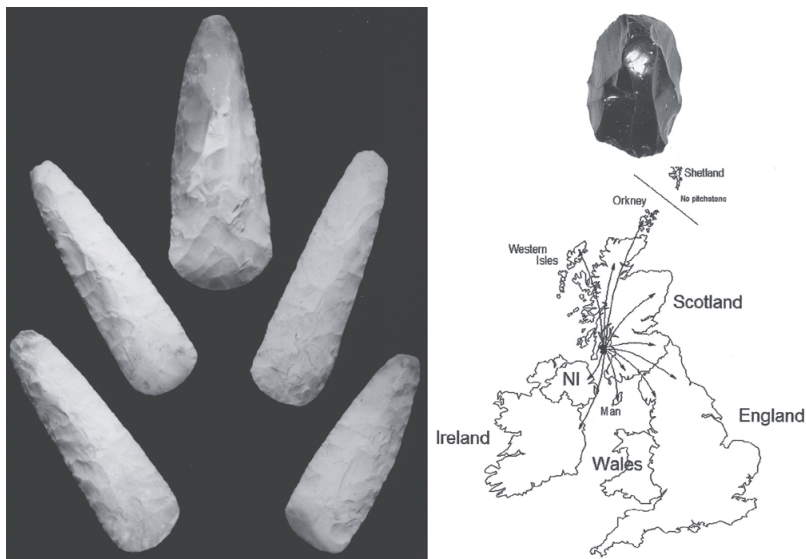


Figure 19.5. Left: axeheads from hoard of Antrim flint items found at Auchenhoan, Argyll and Bute; right: pitchstone core from Nappan, Co. Antrim, and map showing directions in which Arran pitchstone travelled during the Neolithic (sources: National Museums Scotland; author; Torben Ballin).

Stylistically, the ceramic evidence (Fig. 19.7) shows abundant evidence for the sharing of design ideas across the North Channel, from the earliest use of Carinated Bowl (CB) pottery onwards – and continuing well after the end of the Neolithic period (Sheridan 1995; 2012; 2016). Irish examples of ‘traditional CB’ pottery – reflecting the shared ancestry of the potters, as discussed in the first section of this contribution – include a shallow-bellied bowl with a splaying neck and fingertip fluting from Shane’s Castle, Co. Antrim (Fig. 19.7–1) (and see Sheridan 1985, figs 5.8, 5.12c for other pots in this important but unpublished assemblage), while the specific trajectory taken in the development of ‘modified CB’ pottery in north-east Ireland shares many points of similarity with that in parts of Scotland, including the trend towards heavier rims and angular shoulders rather than carinations; the use of ripple-

burnishing; and the use of lugs (Fig. 19.7–2) (Sheridan 1995; 2016). Most strikingly, the ceramic ‘descendant’ of the Castellar decorated bipartite bowl is to be found both in south-west Scotland, where it is found in Clyde cairns and their forerunners, as at Blasthill, and in north-east Ireland, where it is found in court and portal tombs and – in a later development – in Linkardstown-type cists (Fig. 19.2) (and see Sheridan 1995, fig. 2.3). The use of this distinctive type of pot in Clyde cairns in Scotland – despite the fact that it was initially used in a simple passage tomb – strongly suggests that the two different groups of initial farming immigrants in the west and south-west of Scotland had mixed successfully and were sharing design ideas themselves (Sheridan 2016). As noted above, there is also evidence for the presence of a distinctively Hebridean style of pottery at Portstewart on the north coast of Ireland (Fig. 19.7–3). This last piece of evidence may indicate direct, long-distance connections between Ireland and the Hebrides during the second half of the fourth millennium. Finally, a middle Neolithic connection between pottery-users in north-east Ireland and south-west Scotland (and in particular the Glenluce area of former Wigtownshire) is clear from the sharing of design elements including the liberal use of whipped-cord ‘maggots’ on uncarinated bowls (Fig. 19.7–4) (McInnes 1964; Sheridan 1995).

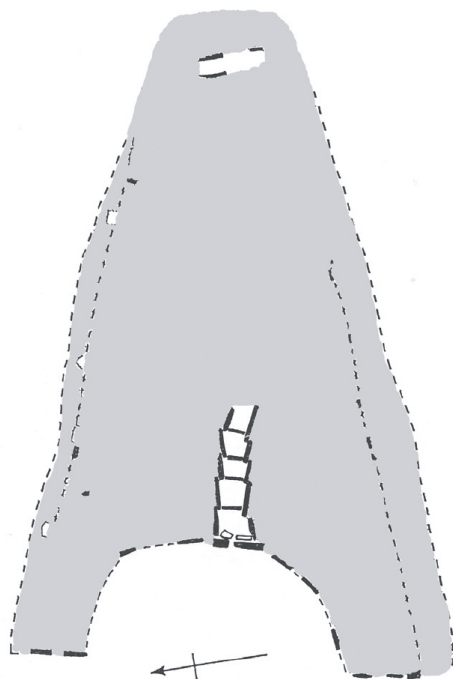


Figure 19.6. Top: Clyde cairn, East Bennan, Arran (after Henshall 1972); bottom: court tomb, Creggandevsky, Co. Tyrone (from Foley 1988), showing the striking similarities between these cognate monuments.

There is much dating work still required in order to refine our knowledge of how these networks operated at different times during the fourth millennium. In particular, the questions of whether Antrim flint began to be exported to Scotland much before its appearance in the Giant's Grave Clyde cairn on Arran, and at what date the Auchenhoan hoard was deposited ([Fig. 19.5](#)) (Saville 1999), are poorly served by the date (on unidentified bulk charcoal) of 5095 ± 120 BP (UB-205, 4230–3645 cal BC at 95.4%) for a spread of activity connected with the manufacture of blade-polished flint axeheads at Mad Man's Window, Co. Antrim (Cooney *et al.* 2011, 603). Notwithstanding such difficulties, it is clear that there was regular seaborne interaction between communities in north-east Ireland and Scotland for most, if not all of the fourth millennium, and that these interactions (and no doubt familial linkages) – along with others (e.g. north–south interactions down the Irish Sea) – shaped the specific identities, architecture and material culture of the farming groups involved in these networks.

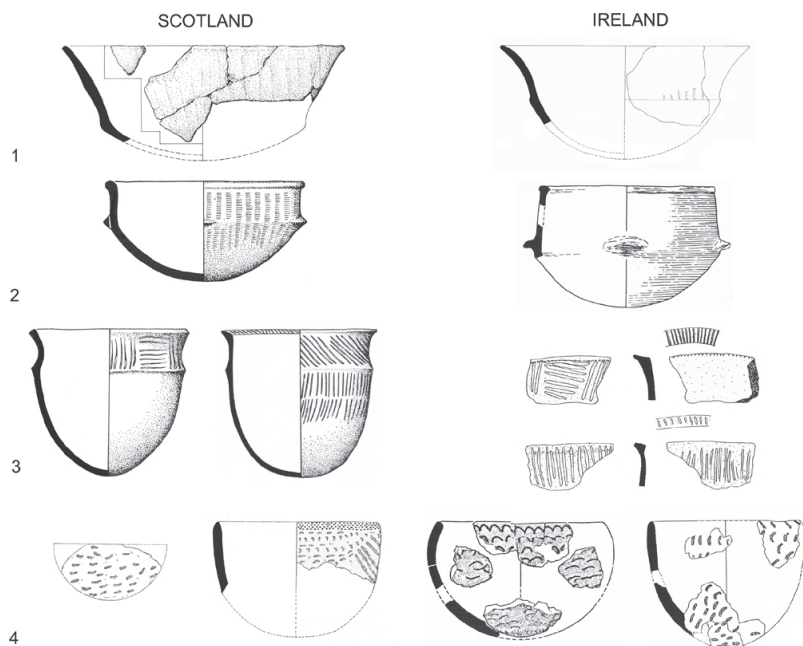


Figure 19.7. Fourth millennium ceramic connections between Scotland and Ireland. 1. Traditional Carinated Bowl: left, Garthdee Road, Aberdeen; right: Shane's Castle, Co. Antrim; 2. Modified Carinated Bowl: left, Cultoquhey, Perth and Kinross; right, Goodland, Co. Antrim; 3. Hebridean Neolithic pottery: left, Clettraval and Unival, North Uist; right, Portstewart Sandhills, Co. Derry/Londonderry; 4. Middle Neolithic uncarinated bowls decorated with whipped cord 'maggots': left, Glenluce Sands, Dumfries and Galloway; right, Annaghmare, Co. Armagh and Tamnyrankin West, Co. Derry/Londonderry. Not to scale. (Sources: most feature in Sheridan 1985; some illustrations are the author's own. The Garthdee Road bowl was drawn by Marion O'Neil).

Long-distance interaction between Orkney and Boyne Valley elites from c. 3200/3100 cal BC

A third type of interdigitation between the histories of the Irish and Scottish Neolithics can be seen towards the end of the fourth millennium and the beginning of the third, and this time it seems to have involved long-distance travel by a select few, and the two-way adoption of exotic ideas, objects and practices, as part of a power-play strategy featuring manipulation of beliefs about the dead and the cosmos.

As previously discussed elsewhere (e.g. Hensey 2015; Schulting *et al.* 2010; Sheridan 1986a; 2004b; 2014b), the construction of the enormous passage tombs of Knowth, Dowth and Newgrange in the Brú na Bóinne near Ireland's east coast – the culmination of a process of competitive conspicuous consumption on funerary monuments within the passage tomb tradition in Ireland – appears to have drawn people from far and wide, including ambitious individuals from Orkney keen to enhance their own local standing. This long-distance travel by a privileged few arguably entailed what Mary Helms (1998) has

termed ‘cosmological acquisition’ – that is, the acquisition of exotic items and/or esoteric knowledge from distant communities in order to enhance prestige and authority back home. We can see the latter in the construction of the Maeshowe-type passage tombs in Orkney, which explicitly reference Boyne Valley developed passage tombs, not only in ground plan (including the use of a long passage) but also, in a few cases, in the use of spiral designs on structural (especially lintel) stones, and at Maeshowe itself in the orientation of the monument on the midwinter solstice.⁶ The construction of these novel, Maeshowe-type passage tombs can be seen as an act of competitive conspicuous consumption, exceeding by far the input of labour in constructing previous megalithic funerary monuments (of simpler passage tomb and stalled type) on Orkney, and involving esoteric symbols and probably also exotic practices that had been associated with the annual revisiting of the ancestors in the Boyne Valley.⁷ As for when the Maeshowe-type passage tombs were built, the dating evidence from Quanterness (Schulting *et al.* 2010) is potentially misleading as the earliest-dated human remains in that monument, dating to 3501–3211 *cal BC* at 95.4% (Schulting *et al.* 2010, illus. 11) could theoretically have been brought across from an older funerary monument, thereby symbolising an inter-generational continuity, from the old monument to the new, in the group of people accorded the privilege of being placed within Quanterness. Dating of the other human remains from Quanterness is wholly in line with the dating of the major Boyne Valley passage tombs (and of the Mound of the Hostages passage tomb at Tara), which suggests the last two centuries of the fourth millennium as the period when these tombs are most likely to have been constructed (as discussed in Bayliss and O’Sullivan 2013; Schulting *et al.* forthcoming).

Construction of this new type of tomb appears to have been the start of an ambitious initiative within Orkney to create a new and hierarchical social order. Other elements of this identity-formation strategy arguably included invention of the flat-based

Grooved Ware style of pottery, with some of its decoration evocative of Irish passage tomb designs, in contradistinction to the round-based ceramic repertoire that had preceded it and that continued in use after its appearance (MacSween *et al.* 2015; C. Richards *et al.* 2016). The other elements also included the construction of large, monumental buildings other than passage tombs, as at Barnhouse, Ness of Brodgar and Links of Noltland, with Ness of Brodgar appearing to be a veritable walled ceremonial centre (C. Richards *et al.* 2016; Towers *et al.* 2015; see also Moore and Wilson 2011, 19–21 regarding Structure 8(10)); the use of variously-shaped carved stone symbols of power, including balls and maceheads; and creation of the open-air circular monument format, as seen in the stone circle surrounded by a ditch and bank at the Stones of Stenness.⁸ Space does not permit a full discussion of these various elements and their origins, although such a discussion is long overdue (e.g. concerning ovoid maceheads). Some elements – Grooved Ware pottery and buildings – are discussed elsewhere (e.g. Bayliss *et al.* in press; MacSween *et al.* 2015; C. Richards and Jones 2016; C. Richards *et al.* 2016). Suffice it to note that, once the vibrant and innovative society of late fourth millennium Orkney had become established, people came to visit, attracted by its growing fame as a major focus for ceremonial activity, just as Brú na Bóinne had been. A resultant reciprocal movement of influence can be traced, leading back from Orkney to Ireland along the west coast of Scotland (Fig. 19.8) (Sheridan 2004b) and being manifested along this arc in the construction of stone and timber circles, as at Calanais and Machrie Moor (Ashmore 2016; Haggarty 1991); the use of early-style Grooved Ware; the use of maceheads and carved stone balls; and, at Knowth, the use of beads in the form of miniature carved stone balls (Sheridan 2014b). A similar southward spread of Orcadian-style material culture, monuments and practices can be traced along the North Sea coast, extending as far as southern England.

Thus, in this complex cross-fertilisation of ideas, objects and practices that seems to have occurred between c. 3200 and c. 2900 cal BC, the trajectories of the Scottish and Irish Neolithics were once more linked. This was not the end of the story, for in the complex timber ceremonial enclosures seen at Ballynahatty near Belfast (Cooney 2002; Hartwell 2002) and at Dunragit (Thomas 2015) and Forteviot (Noble and Brophy 2011) (*inter alia*) in Scotland, and in the cup-and-ring rock art that may well have been created during the first half of the third millennium (Sheridan 2012), there is a continuation of links between Ireland and Scotland, the full details of which remain to be discovered.⁹

Conclusions

It is hoped that this brief review of the interdigitating nature of the Irish and Scottish Neolithics has shed some light on shared origins during the late fifth and early fourth millennium, social dynamics throughout the fourth millennium and the impact of long-distance travel and elite interaction during the late fourth and early third millennium cal BC. As will be clear, there is still much disagreement, and much that remains to be discovered, concerning the beginning of our story – and no doubt much that also remains to be found out about the rest of the story. While newly-applied techniques such as ancient DNA analysis have the potential for unlocking some of this information, it is only through fresh, targeted fieldwork that we will be able to address the key outstanding questions. To that end, it is hoped that the proposed *Boyne to Brodgar* research initiative on Neolithic monumentality and society in Ireland, Scotland and the Isle of Man (Sheridan and Cooney 2014)¹⁰ will help to provide some of the answers in the future.

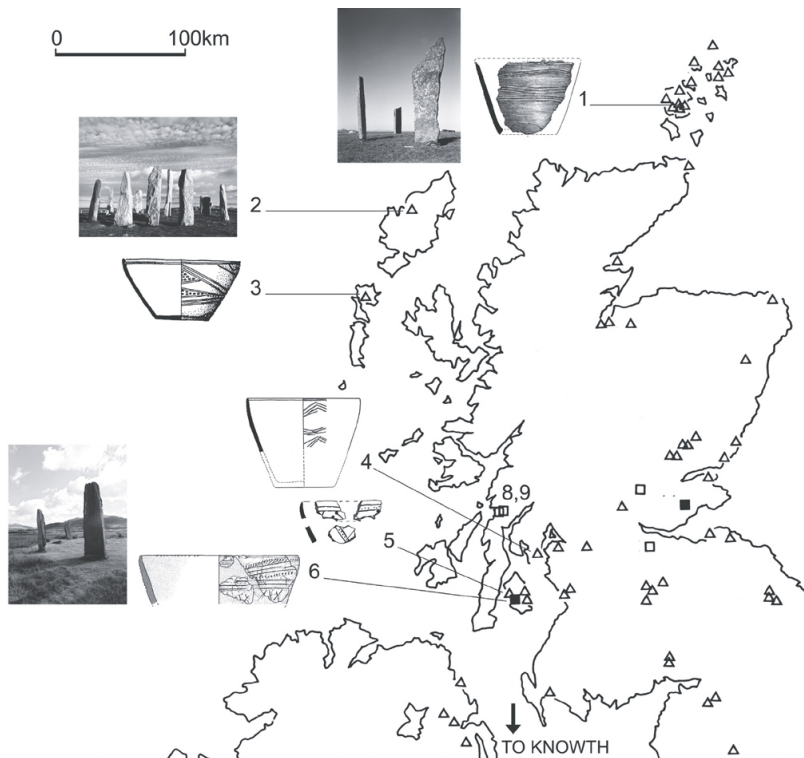


Figure 19.8. Map showing part of the south-west spread of ideas, practices and objects from Orkney towards Ireland at the beginning of the third millennium, highlighting examples of early Grooved Ware (as of 2004) and location of stone and/or timber circles. Key: triangles = findspots of Grooved Ware in general; squares = stone and/or timber circles; 1. Stones of Stenness; 2. Calanais; 3. Unival; 4. Townhead, Bute; 5. Tormore, Arran; 6. Machrie Moor, Arran. (From Sheridan 2004b).

Notes

1

<http://www.royalarchinst.org/rai-lectures-online/8-Jan-14>

2

Throughout, italics indicate Bayesian-modelled date estimates.

3

See also Sheridan and Cooney (2014) for references to other dates for Irish passage tombs that have been obtained since 2011, including two other pre-3600 cal BC human bone dates from Baltinglass.

4

Note that the ceramic repertoire includes uncarinated, S-profile and necked vessels as well as carinated pots.

5

<https://www.qub.ac.uk/sites/INSTARPeopleofPrehistoricIreland/Instar/>, accessed June 2016.

6

At Maeshowe, the tomb was built so that the setting sun's rays would travel up the passage and into the chamber, whereas at Newgrange the target is the rising midwinter sun.

7

A parallel and probably contemporary process of aggrandisement, featuring the construction of 'bigger and better' stalled cairns, can be seen for example at Rowiegar on Rousay (Hutchison *et al.* 2015).

8

<http://www.scottishheritagehub.com/content/scarf-neolithic-panel-report>, accessed June 2016

9

See Carlin and Cooney (in press) for a review of developments in Ireland that includes the 3000–2500 cal BC period.

10

<https://prehistoric-scotland.com/>, accessed June 2016.

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